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Geological Survey of New York.

NATURAL HISTORY OF NEW YORK.

PALÆONTOLOGY.

VOL. V.—Part 1.

LAMELLIBRANCHIATA.

PLATES AND EXPLANATIONS.

ALBANY:
VAN BENTHUYSEN PRINTING HOUSE.
1883.

PALÆONTOLOGY OF NEW YORK.

[VOL. V, PART 1.]

LAMELLIBRANCHIATA.

Circumstances beyond the control of the author have prevented the publication of the volume upon the lamellibranchiate shells of the Upper Helderberg, Hamilton and Chemung Groups. The plates, to the number of seventy-nine, have long since been lithographed, and the usual number of 3,000 impressions of each one have been printed.

In 1870 the writer published a "PRELIMINARY NOTICE of the Lamellibranchiate shells of the Upper Helderberg, Hamilton and Chemung Groups, with others from the Waverly sandstones, [preparatory for the Palæontology of New York.]" Part 2.

This preliminary notice was published in an incomplete condition,* but at that time I anticipated its early completion, and the publication of Part 1, embracing the pectenoid and aviculoid forms of this class of fossils. Other duties prevented this publication at the time, and subsequently it became necessary to undertake the preparation of the volume of "ILLUSTRATIONS OF DEVONIAN FOSSILS," and to complete the publication of Volume V, part II, before the publication of the Lamellibranchiata could be resumed.

In 1874, several copies of the lithographed plates were bound with inter-leaves, on which were written the names of species and explanations of figures, as far as then determined. One of these copies was sent to Mr. S. A. Miller, of Cincinnati, with the permission to make such use of the material as he might think proper in the preparation of his catalogue of American Palæozoic Fossils. A copy of the same was also sent to the late Dr. J. J. Bigsby, who has made some reference to the species in his Thesaurus Devonicus. At a later date, a copy of the volume was given to Mr. Barrande, who was at that time preparing his great work on the "ACEPHALES" of Bohemia, since published in 361 plates. At the request of Mr. Henry Nettleroth, of Louisville, Kentucky, a set of the plates, with manuscript names, was sent to him for his use in the preparation of the Palæontogy of the Kentucky Geological survey. Portions of the series

* This notice, to the number of 96 pages, was published in January, 1870, and later, the burning of the printing office destroyed the type and materials in the hands of the printer; leaving in the author's possession some pages of proof which have not yet been published, except so far as the list of species are appended on a page at the end of the Preliminary Notice.

of plates have been sent to other persons, engaged in pal
studies.

Through the sources above referred to, some of these
names have found their way into print, while it has be
cable for the author to bring the descriptions of the sp
the public in printed form. For more than three years
has been done for the Palæontology of the State, and
that considerable time must yet elapse before the volume
lished.

In the mean time the descriptions of the species hav
municated with the State Museum Report, not yet pu
more than two years have elapsed since these were p
hands of the printer. The prospect of still further d
publication and the numerous inquiries from students
regarding the work has induced the author to present t
position of the contents of the volume of plates, togethe
of other species which will occupy some twelve or more p
the eighty plates already lithographed.

This catalogue of species has been prefaced by a list
new genera, with reference to the plate and figure of an
each one.

The author is quite aware of the great objection wh
made to such a mode of publication as the present one,
apology is the unprecedented delay in printing, both
medium of the Palæontology and of the State Museum

The plates which accompany this prefatory note sho
sive variety of forms from the higher Palæozoic format
York, and will enable the student to identify the majority
of this class, which has hitherto been impracticable o
the paucity of publications and the difficulty of the subj
Cambrian and Silurian formations of the United States
branchiate shells rarely form a conspicuous or important
as we ascend in the series these forms increase in n
we at once remark their great variety and abundance i
ilton and Chemung groups. Perhaps no country in th
equal area, can furnish such an abundant and varied f

rior extremity, and large straight wing marked by a strong longitudinal fold. This genus bears the same relation to Actinoptera, that Leptodesma does to Leiopteria. Example, pl. 23, fig. 17.

Glyptodesma, n. g. Ligamental area striated, continuous. Hinge with two strong lateral teeth, and numerous irregular transverse plications along the cardinal margin. In form like Actinodesma but without the prominent diverging teeth of that genus. Examples, pl. 11, figs. 3, 4; pl. 13, figs. 5, 10.

Leiopteria, n. g. Aviculoid resembling Actinoptera in form. Anterior extremity auriculate; wing large, extremity produced. Test without prominent rays. Example, pl. 20, fig. 17.

Leptodesma, n. g. In its prevailing forms, like Leiopteris, except that the anterior end is nasute and acute, instead of auriculate and rounded. Hinge-line narrow. Example, pl. 22, fig. 21.

Pteronites McCoy. This genus is restricted to those possessing the characters of the original types. Body very oblique. Hinge-line longer than the body of the shell. Wing and hinge extended posteriorly. Example, pl. 22, fig. 26.

Ectenodesma, n. g. Resembles Glyptodesma in outline except that the anterior wing is more produced, and both wings more acute at their extremities. Test ornamented with rays. Example, pl. 23, fig. 30.

Palæopinna, n. g. Shell gaping in front. Test marked by fine radiating lines. More convex and with finer rays than in the ordinary Pinna. Example, pl. 25, fig. 18.

Plethomytilus, n. g. Mytiloid gibbous shells, with a finely striated ligamental area. Hinge edentulous so far as observed. Differs from Mytilarca in its true hinge line, and the absence of teeth. From Gosselettia, *Barrois*, in its erect form, shorter transverse hinge-line, absence of cardinal and lateral teeth, and nontruncate anterior side. This genus will include Conrad's *Inoceramus mytilimerus* from the Lower Helderberg group. Example, pl. 30, figs. 5, 7; pl. 31, fig. 2.

Byssopteria, n. g. Shell erect, alate posteriorly, truncate with a nasute projection in front. Surface radiated. Examples, pl. 32, figs. 21, 22; pl. 80, fig. 11.

Dystatella. Tellinoid in form, equivalve, contracted and nasute

ters, probably fresh-water or estuary. Examples, pl. 40, figs. 1–4; pl. 80, fig. 12.

References to the Plates of Vol. V, pt. I, of the Palæontology of New York.

PLATE I.

Figs.			
1.	Aviculopecten	Cleon, n. sp.	*Upper Helderberg*
2.	do	ignotus, n. sp.	*Upper Helderberg*
3.	Pterinopecten	terminalis, n. sp. × 2	*Upper Helderberg*
4.	do	insons, n. sp. × 2	*Upper Helderberg*
5.	Lyriopecten	Dardanus, n. sp.	*Upper Helderberg*
6, 7.	Pterinopecten	multiradiatus, n. sp.	*Upper Helderberg*
8.	Aviculopecten	insignis, n. sp. × 2	*Marcellus and Hamilton*
9.	do	pecteniformis CONRAD	*Upper Helderberg*
10, 11.	do	Sanduskyensis, MEEK	*Upper Helderberg*
12.	Pterinopecten	dignatus, n. sp. × 2	*Marcellus*
13.	do	lautus, n. sp. × 2	*Marcellus*
14, 15.	do	dignatus, n. sp. × 2	*Marcellus*
16, 17.	do	exfoliatus, n. sp.	*Marcellus*
18.	do	invalidus, n. sp. × 2	*Marcellus*

PLATE II.

1–4.	Lyriopecten	interradiatus, n. sp.	*Hamilton*
5, 6.	Aviculopecten	bellus, CONRAD × 2.	*Hamilton*
7, 8.	do	ornatus, n. sp. × 2	*Hamilton*
9.	do	bellus, CONRAD × 2	*Hamilton*
10–19.	Pterinopecten	undosus, n. sp.	*Hamilton*

PLATE III.

1, 2.	Aviculopecten	Idas, n. sp.	*Hamilton*
3–12.	do	scabridus, n. sp.	*Hamilton*
13.	do	insignis, n. sp.	*Marcellus and Hamilton*
14.	do	ornatus, n. sp	*Hamilton*
15.	do	mucronatus, n. sp.	*Hamilton*
16, 17.	do	lautus, n. sp.	*Hamilton*
18–22.	do	exacutus, n. sp.	*Hamilton*

PLATE IV.

1, 2.	Lyriopecten	parallelodontus, HALL	*Schoharie grit*
3–8.	do	orbiculatus, HALL	*Hamilton*
9.	do	macrodontus, HALL	*Hamilton*
10.	do	anomiæformis, HALL	*Chemung*
11.	do	tricostatus, VANUXEM	*Chemung*

PLATE V.

1–8.	Pterinopecten	Vertumnus, n. sp.
9, 10.	Aviculopecten	fasciculatus, n. sp.
11.	do	Orestes, n. sp
12.	do	fasciculatus, n. sp.
13–15.	do	repletus, n. sp.
16, 17.	do	fasciculatus, n. sp
18, 19.	do	princeps, CONRAD
20, 21.	do	formio, n. sp
22.	do	Phorcus, n. sp
23, 24.	do	princeps, CONRAD

PLATE VI.

1–9.	Aviculopecten	princeps, CONRAD

PLATE VII.

1–7.	Aviculopecten	duplicatus, HALL
8–11.	do	rugæstriatus, HALL
12.	do	subcancellatus, HALL
13.	do	Itys, n. sp.
14–19.	do	subcancellatus, HALL
20.	do	squama, n. sp. × 2
21.	do	dolabriformis, HALL, × 2
22, 23.	do	convexus, HALL, × 2
24.	do	signatus, HALL, × 2
25.	Lyriopecten	Polydorus, n. sp.
26.	do	tricostatus, Vanuxem
27, 28.	Aviculopecten	tenuis, n. sp.
29, 30.	do	altus, n. sp.
31.	do	ellipticus, n. sp
32, 33.	do	patulus, n. sp

PLATE VIII.

PLATE XVI.

1, 2.	Pterinea	consimilis, n. sp.
3.	do	Chemungensis, VANUXEM
4.	do	prora, n. sp.
5, 6.	do	rigida, n. sp
7.	do	Chemungensis, VANUXEM
8, 9.	do	consimilis, n. sp.
10.	do	Chemungensis, VANUXEM
11.	do	consimilis, n. sp
12.	do	Chemungensis, VANUXEM
13, 14.	do	prora, n. sp.

PLATE XVII.

1–3.	Actinoptera	muricata, HALL ×
4.	do	Leander, n. sp. ×
5–11.	Leiopteria	lævis, HALL
12.	Leptodesma	Marcellense, n. sp
13–15.	Pterinopecten	Hermes, n. sp
16.	do	spondylus, n. sp
17–21.	do	conspectus, n. sp.
22.	do	filitextus, n. sp.
23.	Actinoptera	subdecussata, HALL
24.	do	decussata, HALL
25–27.	do	subdecussata, HALL
28.	do	decussata, HALL
29–31.	do	subdecussta, HALL

PLATE XVIII.

1–15.	Actinoptera	decussata, HALL

PLATE XIX.

1.	Leiopteria	Dekayi, n. sp*

4, 5.	do	Conradi, n. sp.	*Hamilton*
6, 7.	do	Rafinesqui, n. sp.	*Hamilton*
8.	do	Mitchelli, n. sp.	*Hamilton*
9.	do	Greeni, n. sp.	*Hamilton*
10.	do	Oweni, n. sp.	*Hamilton*
11.	do	Bigsbyi, n. sp.	*Hamilton*
12.	do	Greeni, n. sp.	*Hamilton*
13–15.	do	Bigsbyi, n. sp.	*Hamilton*
16–19.	do	Dekayi, n. sp.	*Hamilton*

PLATE XXI.

1–9.	Leptodesma	Rogersi, n. sp.	*Hamilton*
10–13.	do	spinigerum, CONRAD.	*Chemung*
14.	do	longispinum, HALL.	*Chemung*
15, 16.	do	robustum, n. sp.	*Chemung*
17–19.	do	longispinum, HALL.	*Chemung*
20.	do	robustum, n. sp.	*Chemung*
21.	do	potens, n. sp.	*Chemung*
22, 23.	do	protextum, CONRAD.	*Chemung*
24–28.	do	sociale, n. sp.	*Chemung*
29.	do	Mortoni, n. sp.	*Chemung*
30.	do	potens, n. sp.	*Chemung*
31, 32.	do	Mortoni, n. sp.	*Chemung*
33, 34.	do	sociale ?	*Chemung*
35–39.	do	Lichas, n. sp.	*Chemung*
40.	do	lepidum, n. sp.	*Chemung*

PLATE XXII.

1.	Leptodesma	sp. ?	*Chemung*
2.	do	complanatum, n. sp.	*Chemung*
3–7.	do	Becki, n. sp.	*Chemung*
8–10.	do	Matheri, n. sp.	*Chemung*
11, 12.	do	potens, n. sp.	*Chemung*
13.	Leptodesma	umbonatum, n. sp.	*Chemung*
14.	do	do var.	*Chemung*
15.	do	naviforme, n. sp.	*Chemung*
16.	do	potens var. juvens, n. var.	*Chemung*
17, 18.	Leiopteria	nitidum, n. sp.	*Chemung*
19.	Leptodesma	potens, n. sp.	*Chemung*
20.	do	Mortoni, n. sp.	*Chemung*
21.	do	potens, n. sp.	*Chemung*
22.	do	Lysander, n. sp.	*Chemung*
23.	do	extenuatum, n. sp.	*Chemung*
24.	Pteronites	rostratus, n. sp.	*Chemung*
25–27.	do	profundus, n. sp.	*Chemung*
28.	Leptodesma	aliforme, n. sp.	*Chemung*

PLATE XXIII.

1.	Leptodesma	naviforme, n. sp.
2.	Actinoptera	perstrialis, n. sp.
3.	do	delta, n. sp.
4.	do	epsilon, n. sp.
5, 6.	do	Boydi, CONRAD
7.	do	perstrialis, n. sp.
8.	do	epsilon ?
9.	do	zeta, n. sp.
10, 11.	Ptychopteria	expansa, n. sp.
12.	do	Proto, n. sp.
13.	do	sinuosa, n. sp.
14, 15.	do	Proto, n. sp.
16.	do	Sao, n. sp.
17–20.	do	eugenia, n. sp.
21, 22.	do	alata ?
23.	do	Sao, n. sp.
24.	do	Eucrate, n. sp.
25, 26.	do	alata, n. sp.
27–30.	Ectenodesma	birostratum, n. sp.

PLATE XXIV.

1.	Pterinopecten	imbecilis, n. sp.
2.	do	strictus, n. sp.
3.	Aviculopecten	plenus, n. sp.
4.	do	Idas, n. sp.
5.	Lyriopecten	solox, n. sp.
6.	Pterinea	reversa, n. sp.
7.	Aviculopecten	princeps, CONRAD
8.	Lyriopecten	cymbalon, n. sp.
9.	Pterinea	reversus, var. avis, n. var.
10.	Pterinopecten	suborbicularis, HALL
11.	Pterinea	reversa, var. avis, n. var.
12.	do	do n. sp.

12.	Leptodesma	rude, n. sp.	*Chemung*
13.	do	Maclurii, n. sp.	*Chemung*
14–17.	Glyptodesma	erectum? CONRAD (sp.)	*Hamilton*
18.	Palæopinna	flabella, n. sp.	*Oriskany sandstone*
19.	do	recurva, n. sp.	*Upper Helderberg*

PLATE XXVI.

1–4.	Limoptera	cancellata, HALL	*Upper Helderberg*
5.	do	pauperata, HALL	*Upper Helderberg*
6–9.	do	macroptera, CONRAD	*Hamilton*

PLATE XXVII.

1–9.	Limoptera	macroptera, CONRAD	*Hamilton*

PLATE XXVIII.

1–3.	Limoptera	curvata, HALL	*Hamilton*
4, 5.	do	macroptera, CONRAD	*Hamilton*

PLATE XXIX.

1–4.	Limoptera	macroptera, CONRAD	*Hamilton*
5, 6.	do	obsoleta, HALL	*Hamilton*

PLATE XXX.

1.	Plethomytilus	arenacea, HALL	*Schoharie grit*
2–7.	do	ponderosa, HALL	*Upper Helderberg*

PLATE XXXI.

1–8.	Plethomytilus	oviformis, CONRAD (sp.)	*Hamilton*
9–17.	Gosselettia	triquetra, CONRAD (sp.)	*Hamilton*

PLATE XXXII.

1–6.	Mytilarca	umbonata, n. sp.	*Chemung*
7–14.	do	Chemungensis, CONRAD (sp)	*Chemung*
15–19.	do	carinata, HALL	*Chemung*
20.	do	attenuata, HALL	*Chemung*
21, 22.	Byssopteria	radiata, HALL	*Chemung*

PLATE XXXIII.

1, 2.	Gosselettia	retusus, n. sp.	*Hamilton*
3–5.	Mytilarca	occidentalis, WHITE and WHITE	*Kinderhook*
6, 7.	do	fimbristriata, W. and W.	*Kinderhook*
8.	do	Chemungensis, CONRAD	*Chemung*
9–18.	Mytilops	(Modiola) præcedens, HALL	*Chemung*
19–21.	do	simplex, n. sp.	*Chemung*
22.	do	lata, n. sp.	*Chemung*
23, 24.	do	metella, HALL	*Chemung*

PLATE XXXIV.

1–7.	Goniophora	perangulata, HALL.....	*Schoh*
8.	Nyassa	elliptica, n. sp.....	*Cor*
9, 10.	Modiomorpha	concentrica, CONRAD.....	*L*
11.	do	ponderosa, HALL.....	*Cor*
13.	do	Schoharie, n. sp.....	*Schoh*
14.	do	complanata, HALL.....	*Cor*
15–17.	do	linguiformis, n. sp	*Cor*

PLATE XXXV.

This plate will be given to farther illustrations of the g
the preceding plates.

PLATE XXXVI.

1–16.	Modiomorpha	concentrica, CONRAD.....	*L*
17, 18.	do	do ?	*L*
19, 20.	do	cymbula, HALL...	*L*
21.	do	arcuata, n. sp.....	*L*

PLATE XXXVII.

1–16.	Modiomorpha	alta, CONRAD.....	*L*
17.	do	macilenta, HALL.....	*L*

PLATE XXXVIII.

1–16.	Modiomorpha	complanata, HALL.....	*L*

PLATE XXXIX.

1–16.	Modiomorpha	subalata, CONRAD	*L*
17–21.	do	macilenta, HALL	*L*

PLATE XL.

1–4.	Amnigenia	Catskillensis, VANUXEM..	*Oneonta s*
5–9.	Modiomorpha	? hyalea, HALL	*L*

12, 13.	Modiomorpha	neglecta	*Chemung*
14–16.	do	rigida, n. sp.	*Chemung*
17.	do	? recurva, n. sp.	*Chemung*
18–26.	do	quadrula, HALL	*Chemung*
27.	Ptychodesma	? minor, n. sp.	*Chemung*
28–30.	Modiomorpha	hyalea, HALL	*Waverly*

PLATE XLIII.

1–3.	Goniophora	acuta, HALL	*Hamilton*
4–7.	do	rugosa, CONRAD	*Hamilton*
8–21.	do	Hamiltonensis, HALL	*Hamilton*

PLATE XLIV.

1–5.	Goniophora	truncata, n. sp.	*Hamilton*
6–8.	do	carinata, CONRAD	*Hamilton*
9–17.	do	glabra, HALL	*Chemung*
18–22.	do	Chemungensis, VANUXEM	*Chemung*

PLATE XLV.

1, 2.	Nucula	niotica, HALL	*Upper Helderberg*
3, 4.	do	Neda, HALL	*Upper Helderberg*
5–16.	do	Randalli, HALL	*Hamilton and Chemung*
17–27.	do	lirata, CONRAD	*Hamilton*
28.	do	subelliptica, n. sp.	*Hamilton*
29–31.	do	Iowensis, WHITE and WHITFIELD	*Waverly*

PLATE XLVI.

1–11.	Nucula	bellastriata, CONRAD	*Hamilton*
12–23.	do	varicosa, HALL	*Hamilton*
24–37.	do	corbuliformis, HALL	*Hamilton*

PLATE XLVII.

1–12.	Nuculites	oblongata, CONRAD	*Hamilton*
13–16.	do	cuneiformis, CONRAD	*Hamilton*
17–24.	do	triquetra, CONRAD	*Hamilton*
25–30.	do	Nyssa, HALL	*Marcellus and Hamilton*
31–37.	Leda (Nuculana)	diversa, n. sp. × 2	*Hamilton*
38–39.	do	brevirostris, HALL, × 2	*Hamilton*
40, 41.	do	do ? × 2	*Chemung*
42–44.	do	perstriata, n. sp. × 2	*Hamilton*
5–47.	do	rostellata, CONRAD ×	*Hamilton*
48.	do	curta, n. sp. x 2	*Hamilton*
49, 50.	do	Ohioensis, n. sp.	*Waverly*
51, 52.	Nucula	umbonata, n. sp.	*Chemung*
53–55.	Yoldia ?	valvula, HALL and WHITFIELD	*Hamilton*

PLATE XLVIII.

1–15.	Palæoneilo	constricta, CONRAD.....
16–20.	do	do var. flexuosa, n. var..... figs. 8, 10, 12, 13, 14, × 2.....
21–28.	do	plana, HALL, × 2.....
29–38.	do	maxima, CONRAD.....
39.	do	elongata, n. sp.....

PLATE XLIX.

1–12.	Palæoneilo	tenuistriata, HALL.....
13–24.	do	fœcunda, HALL.....
25–32.	do	muta, HALL.....
33–38.	do	filosa, CONRAD.....

PLATE L.

1–12.	Palæoneilo	emarginata, CONRAD, figs 11, 12, × 2..*Hamilton and*
13, 14.	do	bisulcata, HALL, × 2.....
15–22.	do	perplana, HALL.....
23.	do	arata, n. sp.....
24–33.	do	brevis, HALL.....
34–39.	do	attenuata, HALL.....
40, 41.	do	truncata, n. sp.....
42–46.	do	Barrisi, WHITE and WHITFIELD *K*

PLATE LI.

1–10.	Macrodon	Hamiltoniæ, HALL.....
11–16.	do	Chemungensis, HALL.....
17.	Palæoneilo	constricta, CONRAD ×.....
18–20.	Nucula	lamellata, n. sp. × 3.....
22–27.	Ptychodesma	Knappianum, HALL and WHITFIEL

C

PLATE LIV.

1–16.	Grammysia	bisulcata, CONRAD	*Hamilton*

PLATE LV.

1–11.	Grammysia	nodocostata, HALL	*Hamilton*

PLATE LVI.

1.	Grammysia	bisulcata, CONRAD	*Hamilton*
2–8.	do	magna, HALL	*Hamilton*

PLATE LVII.

1, 2.	Grammysia	alveata, CONRAD	*Hamilton*
3–6.	do	circularis, HALL	*Camilton and Chemung*
7–10.	do	magna, HALL	*Hamilton*

PLATE LVIII.

1–12.	Grammysia	elliptica, HALL	*Chemung*
13.	do	circularis, HALL	*Chemung*

PLATE LIX.

1.	Grammysia	(Leptodomus ?) præcursor, HALL	*Schoharie grit*
2–5.	do	secunda, HALL	*Corniferous*
6–12.	do	lirata, HALL	*Hamilton*
13–20.	Grammysia	(Leptodomus ?) constricta, HALL	*Hamilton*
21–27.	do	obsoleta, HALL	*Hamilton*

PLATE LX.

1–11.	Grammysia	alveata, CONRAD	*Hamilton*

PLATE LXI.

1–9.	Grammysia	(Leptodomus ?) arcuata, CONRAD	*Hamilton*
10–22.	do	do subarcuata, HALL	*Chemung*
23–33.	do	do Hannibalensis, SHUMARD	*Kinderhook*

PLATE LXII.

1–9.	Grammysia	(Sphenomya) cuneata, n. sp.	*Hamilton*
10–19.	Cardiomorpha	cordatus, n. sp.	*Hamilton*

PLATE LXIII.

1–3.	Cardiomorpha	bellatula, HALL	*Hamilton*
4.	do	concentrica, n. sp.	*Hamilton*
5.	do	zonata, n. sp.	*Hamilton*
6.	do	donaciformis, n. sp.	*Hamilton*

7, 8.	Cardiomorpha	Eriopa, HALL
9, 10.	do	suborbicularis, HALL
11–15.	do	textilis, HALL ..... *Portage and*
16.	do	undulata, n. sp.
17–20.	do	rotunda, n. sp.
21.	do	oblonga, n. sp.

PLATE LXIV.

1–4.	Edmondia	undulata, HALL
5, 6.	do	subnasuta, n. sp.
7, 8.	do	rhomboidea, HALL
9–18.	do	Philipi, HALL
19–29.	do	Burlingtonensis, WHITE and WHITF *Chemung and*
30.	do	undata, n. sp
31.	do	subcarinata, n. sp
32.	do	depressa, HALL

PLATE LXV.

1–6.	Sanguinolites	truncatus, CONRAD
7–11.	do	arcæformis, HALL
12–17.	do	cuneatus, CONRAD
18, 19.	do	subtortuosus, HALL
20.	do	Ida, HALL
21–29.	do	solenoides, HALL

PLATE LXVI.

1–19.	Sanguinolites	rigidus, WHITE and WHITFIELD *Chemung and*
20–26.	do	clavulus, HALL
27–29.	do	flavius, HALL
30.	do	valvulus, HALL
31–35.	do	Æolus, HALL
36–42.	do	ventricosus, WHITE and WHITFIELD

4–16.	Conocardium	trigonale, HALL	*Corniferous*
17–19.	do	normale, n. sp	*Hamilton*
20–23.	do	eboraceum, HALL	*Hamilton*
24, 25.	do	denticulatum, n. sp	*Hamilton*
26, 27.	do	concinnum, n. sp	*Hamilton*
28, 29.	do	liratum, n. sp	*Chemung*
30, 31.	do	tegulum, n. sp	*Niagara*
32.	do	rugosum, n. sp	*Hamilton*
33.	do	reliquum, n. sp	*Chemung*

The species on Plates LXIX and LXX are given subject to revision on the final issue of the work. Those forms referred to Cardiola are probably not true representatives of that genus, nor do they belong to the genus Cardiopsis, to which some of them have more recently been referred, when we consider the true signification and limitation of that genus. Some of the forms, inferring from their external characters, belong to the genus Panenka of Barrande, and there is probably no genus of prior date to which they can be referred.

PLATE LXIX.

1, 2.	Cardiola ?	elevata, n. sp	*Marcellus*
3.	do	Hero, n. sp	*Corniferous*
4.	do	equilatera, n. sp	*Marcellus*
5–11.	do	radians, CONRAD	*Hamilton*
12–14.	do	Lincklaeni, HALL	*Hamilton*

PLATE LXX.

1.	Cardiola	(for comparison)	*Europe*
2–9.	do	speciosa, HALL, ×	*Genesee slate*
10, 11.	do	Doris, n. sp	*Portage*
12–15.	do	transversa, n. sp	*Chemung*
16.	do	erecta, n. sp	*Chemung*
17.	do	Sao, n. sp	*Chemung*
18–20.	Præcardium	vetusta, HALL	*Portage*
21.	Cardiola ?	dichotoma, n. sp	*Schoharie grit*
22–24.	do	robusta, HALL	*Portage*
25.	Cardiopsis	radiata, MEEK and WORTHEN	*Kinderhook*

PLATE LXXI.

1–14.	Lunulicardium	fragile, HALL. × 2, 4	*Marcellus, Hamilton, Genesee slate and Portage*
15–16.	do	Marcellense, VANUXEM	*Marcellus*
17.	do	rude, n. sp	*Marcellus*
18–23.	do	curtum, HALL	*Hamilton*
24.	do	ornatum ?	*Marcellus*
25–29.	do	ornatum, HALL	*Portage*
30–32.	do	acutirostrum, HALL	*Portage*

PLATE LXXII.

1–19.	Paracyclas	lirata, CONRAD .....
20–22.	do	tenuis, n. sp.....
23–30.	do	elliptica, HALL..... *Upper L*
31–33.	do	do var. occidentalis, HALL *Upper L*
34.	do	ignota, n. sp..... .....
35, 36.	do	? fissa, n. sp..... ..... *Scho*
37–41.	do	elevata, n. sp..... *Scho*

PLATE LXXIII.

1–6.	Microdon (Microdonella) (Eodon) gregarius, HALL..	
7–22.	do	bellistriatus, CONRAD.....
23–30.	do	tenuistriatus, HALL.....

PLATE LXXIV.

1–3.	Microdon (Microdonella) (Eodon) gregarius? HALL.	
4–10.	do	bellistriatus, CONRAD. .....
12, 13.	do	reservâtus, HALL.....
14–19.	do	complanatus, HALL.....
20, 21.	do	tenuistriatus, HALL..... .....

PLATE LXXV.

1, 2.	Cytherodon (Schizodus) tumidus, HALL. *Upper L*	
3–9.	do	appressus, CONRAD .....
10–12.	do	nasutus, n. sp.....
13–15.	do	ellipticus, HALL.....
16–18.	do	gregarius, HALL.....
19–23.	do	rhombeus, HALL .....
24–26.	do	pauper, n. sp.....
27–30.	do	cuneus, HALL .....
31–36.	do	quadrangularis, HALL *Chemung and*
37–40.	do	Chemungensis, CONRAD.....
41–45.	do	oblatus, HALL.....

PLATE LXXVIII.

1–4.	Phthonia	cylindrica, n. sp.	
5–9.	do	nodocostata, HALL	*Hamilton*
10–13.	do	sectifrons, ~~HALL~~ Conrad	*Hamilton*
14.	do	lirata, n. sp., × 3	*Hamilton*
15–21.	Pholadella	radiata, CONRAD	*Hamilton*
22–24.	do	parallela, n. sp	*Hamilton*
25.	do	Newberryi, HALL	*Waverly*
26, 27.	do	constricta, n. sp	*Hamilton*
28.	do	decussata, n. sp	*Waverly*
29–32.	Orthonota	parvula, HALL	*Hamilton*
33.	do	siliquoidea, HALL	*Hamilton*
34, 35.	do	carinata, CONRAD	*Hamilton*
36.	do	ensiformis, HALL	*Hamilton*
37–42	do	undulata, CONRAD	*Hamilton*

PLATE LXXIX.

1–5.	Cypricardinia	planulata, CONRAD	*Schoharie grit*
6–23.	do	indenta, CONRAD, some ×	*Hamilton*
24, 25.	do	cylindrica, HALL and WHITFIELD	*Hamilton*
26–39.	Palæanatina	typa, HALL	*Chemung*
40–49.	do	quadrata, HALL	*Chemung*

PLATE LXXX.

1–3.	Mytilarca	pyrimadata, n. sp	*Schoharie grit*
4.			*Chemung*
5, 6.	Sanguinolites	undatus, HALL	*Chemung*
7.	Modiomorpha	alta, CONRAD (distorted)	*Hamilton*
8.	Cardiola ?		*Marcellus*
9.	do	×2	
10.	do	speciosa, HALL ×	*Hamilton*
11.	Byssopteria	radiata, HALL	*Chemung*
12.	Amnigenia	Catskillensis, Vanuxem (sp.)	*Oneonta sandstone*

List of species described, and of which drawings are made for plates in addition and continuation of those already lithographed. The manuscript descriptions of these are now in the hands of the printer.

Pterinopecten	reflexus, n. sp	*Upper Helderberg*
do	reprobus, n. sp	*Chemung*
do	dispandus, n. sp	*Chemung*
do	erectus, n. sp	*Chemung*
do	nodosus, n. sp	*Upper Helderberg*
Pterinea	grandis, n. sp	*Upper Helderberg*
do	——— n. sp	*Chemung*

Actinoptera	pusilla, n. sp.
do	tenuistriata, n. sp.
do	auriculata, n. sp.
do	eta, n. sp.
do	theta, n. sp.
do	iota, n. sp.
do	kappa, n. sp.
Ptychopteria	Thetis
do	Spio, n. sp.
do	Eudora, n. sp.
do	trigonalis, n. sp.
do	elongata, n. sp.
do	Galene, n. sp.
do	Beecheri, n. sp.
do	spatulata, n. sp.
do	lata, n. sp.
do	gibbosa, n. sp.
do	Vanuxemi, n. sp.
Leiopteria	Sayi, n. sp.
do	Troosti, n. sp.
do	Emmonsi, n. sp.
do	Leai, n. sp.
do	Gabbi, n. sp.
Leptodesma	Shumardi, n. sp.
do	Billingsi, n. sp.
do	Medon, n. sp.
do	Creon, n. sp.
do	Cadmus, n. sp.
do	flaccidum, n. sp.
do	arcæforme, n. sp.
do	Phaon, n. sp.
do	patulum, n. sp.
do	Hector, n. sp.
do	Jason, n. sp.
do	Pelops, n. sp.

UPPER HELDERBERG & HAMILTON GROUPS.

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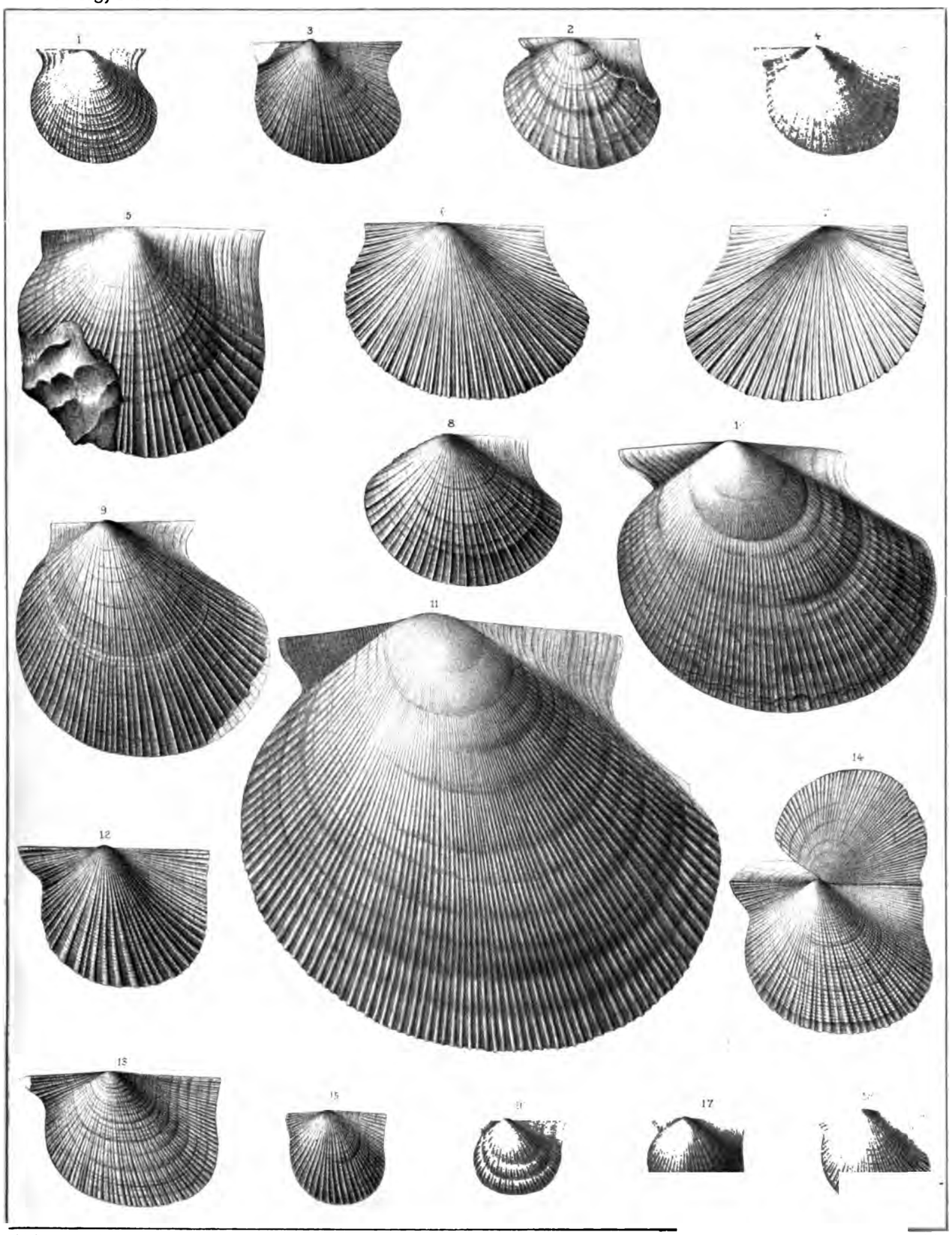

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HAMILTON GROUP.

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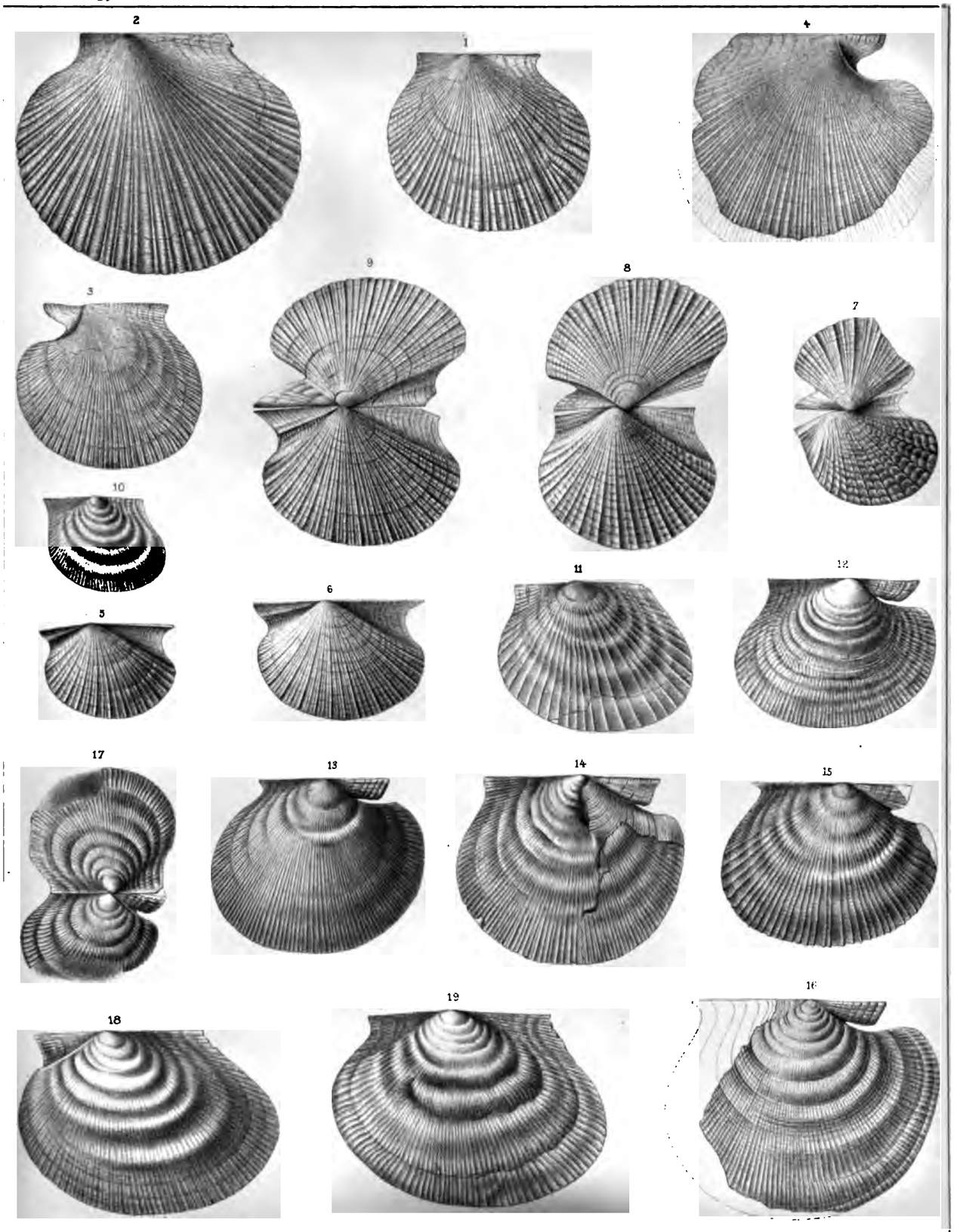

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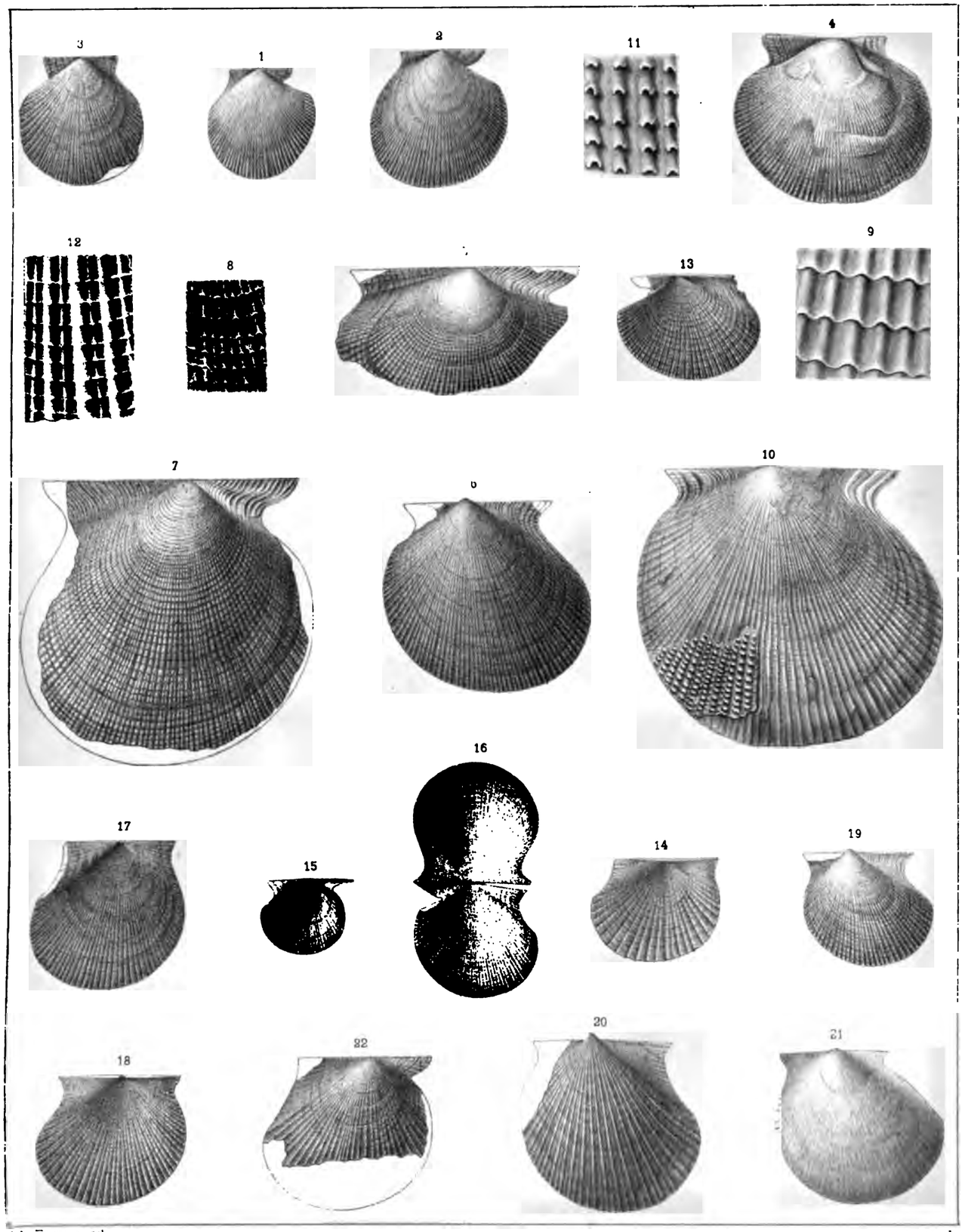
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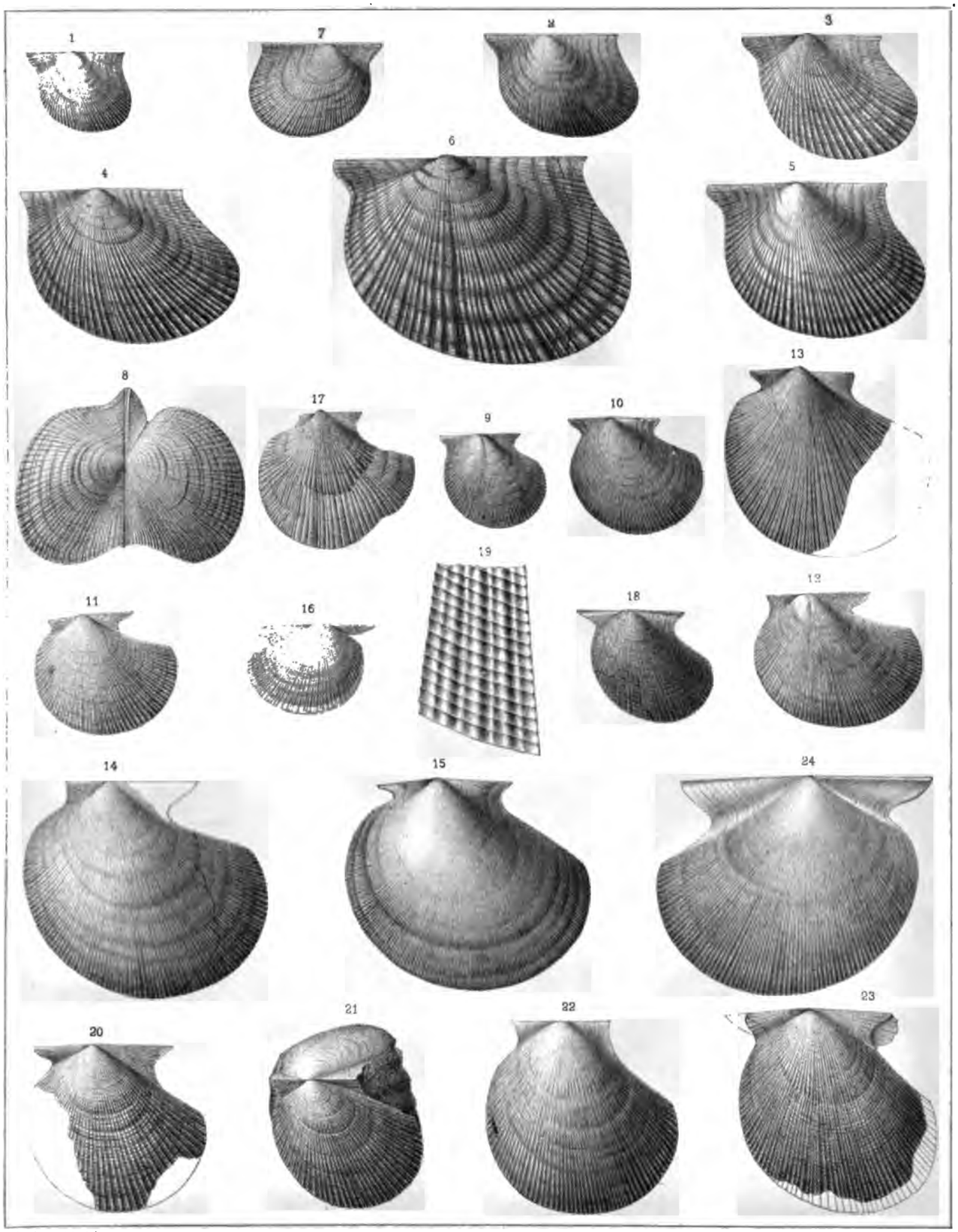
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Actinoptera	pusilla, n. sp.
do	tenuistriata, n. sp.
do	auriculata, n. sp.
do	eta, n. sp.
do	theta, n. sp.
do	iota, n. sp.
do	kappa, n. sp.
Ptychopteria	Thetis
do	Spio, n. sp.
do	Eudora, n. sp.
do	trigonalis, n. sp.
do	elongata, n. sp.
do	Galene, n. sp.
do	Beecheri, n. sp.
do	spatulata, n. sp.
do	lata, n. sp.
do	gibbosa, n. sp.
do	Vanuxemi, n. sp.
Leiopteria	Sayi, n. sp.
do	Troosti, n. sp.
do	Emmonsi, n. sp.
do	Leai, n. sp.
do	Gabbi, n. sp.
Leptodesma	Shumardi, n. sp.
do	Billingsi, n. sp.
do	Medon, n. sp.
do	Creon, n. sp.
do	Cadmus, n. sp.
do	flaccidum, n. sp.
do	arcæforme, n. sp.
do	Phaon, n. sp.
do	patulum, n. sp.
do	Hector, n. sp.
do	Jason, n. sp.
do	Pelops, n. sp.

UPPER HELDERBERG & HAMILTON GROUPS.

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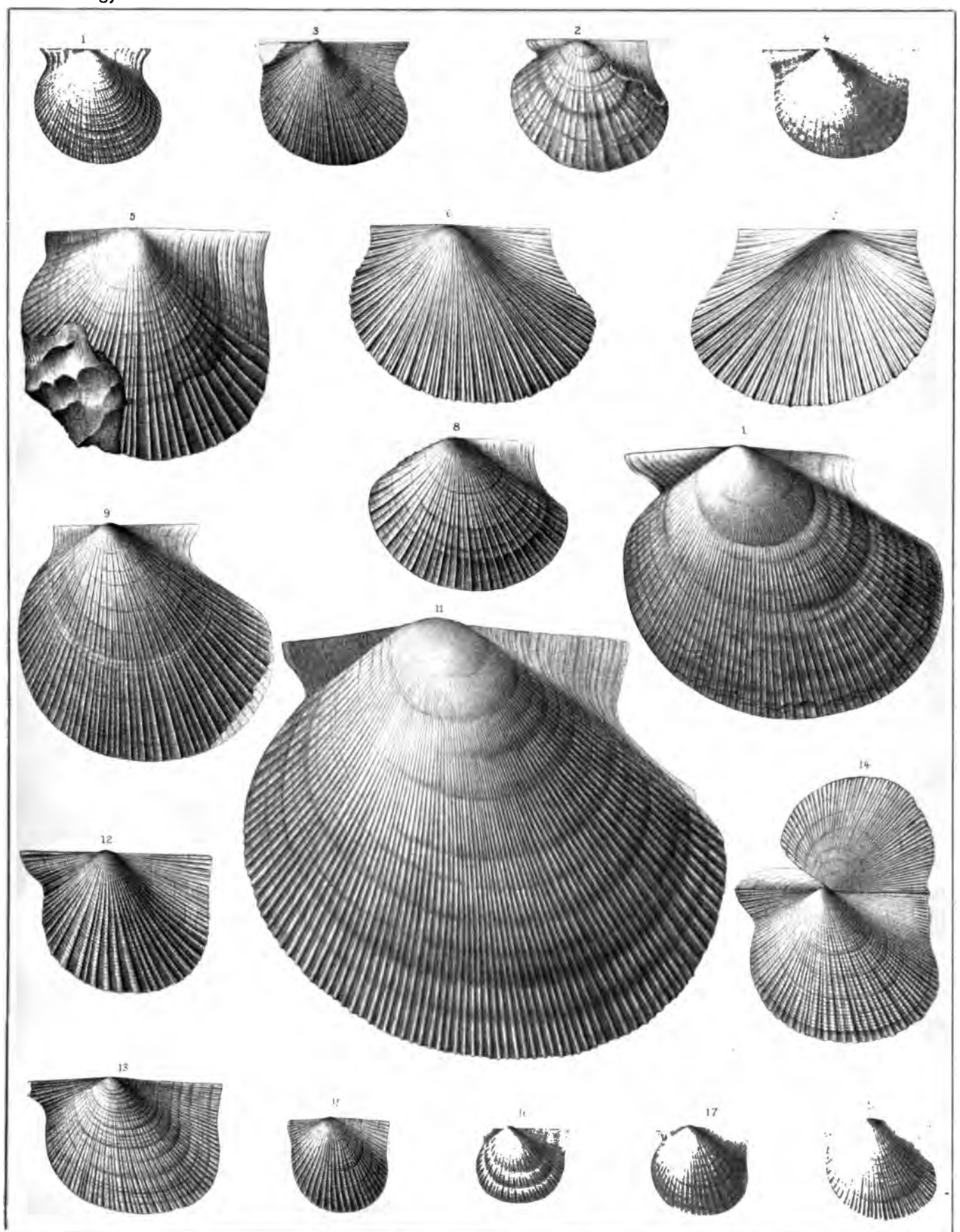

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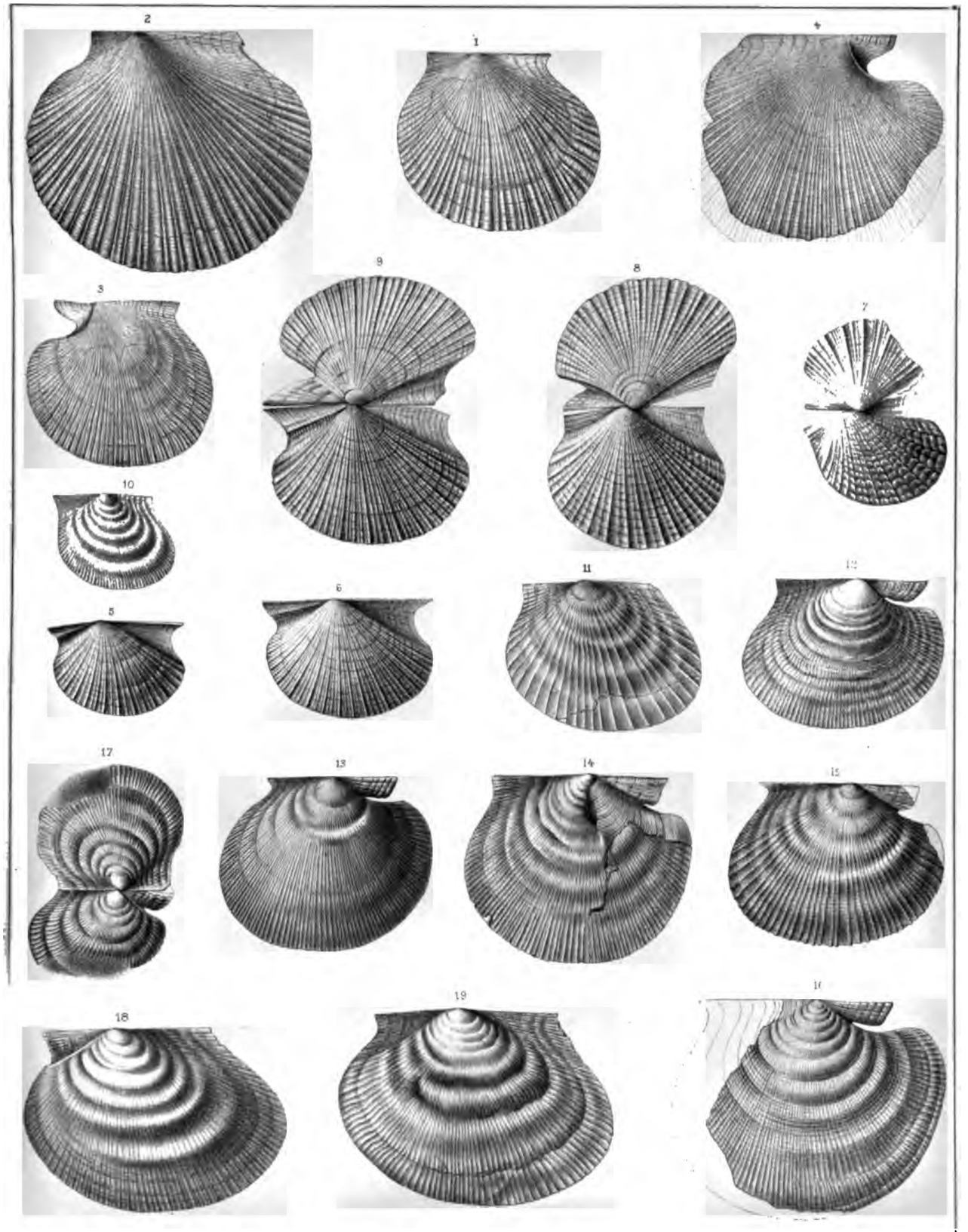

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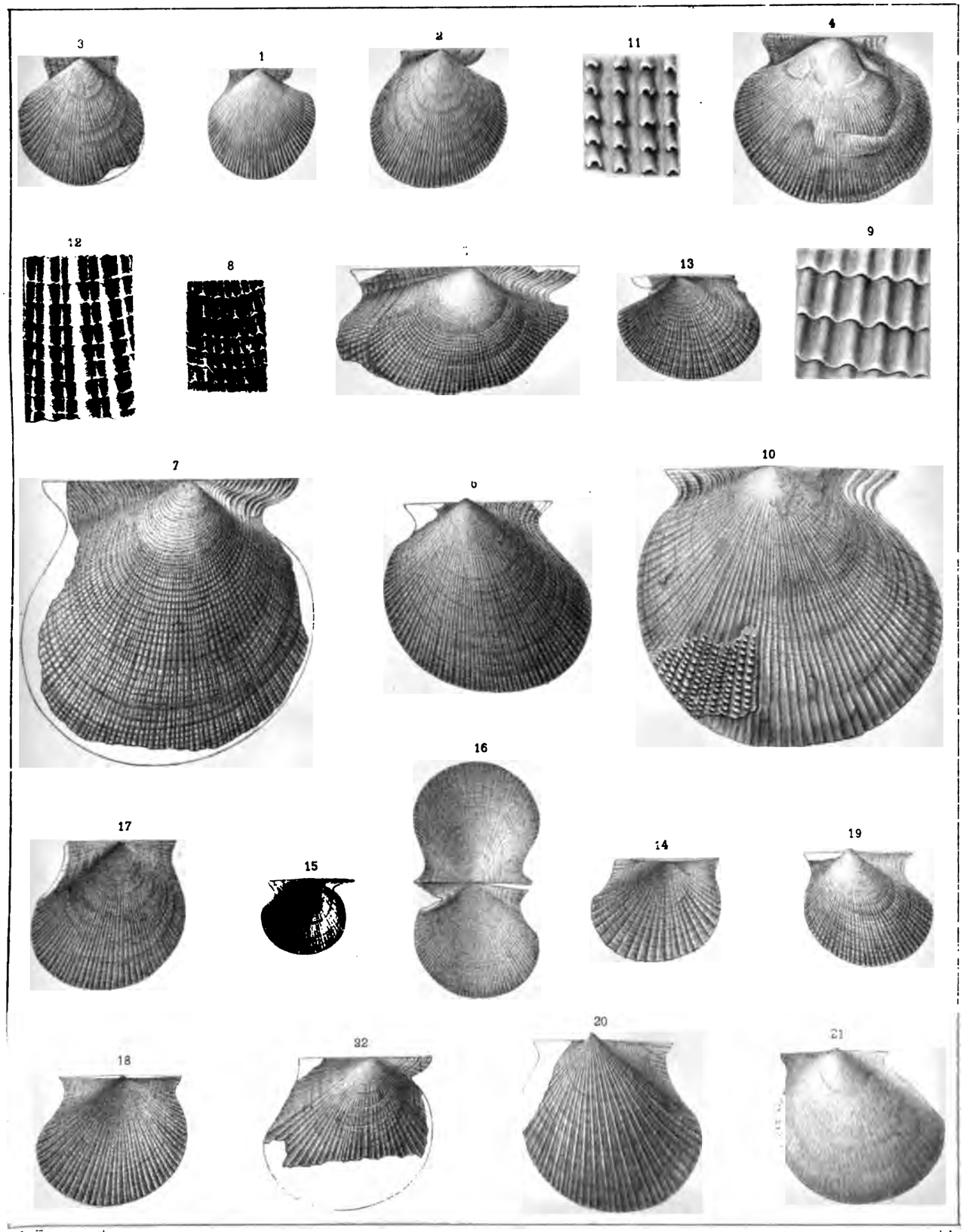
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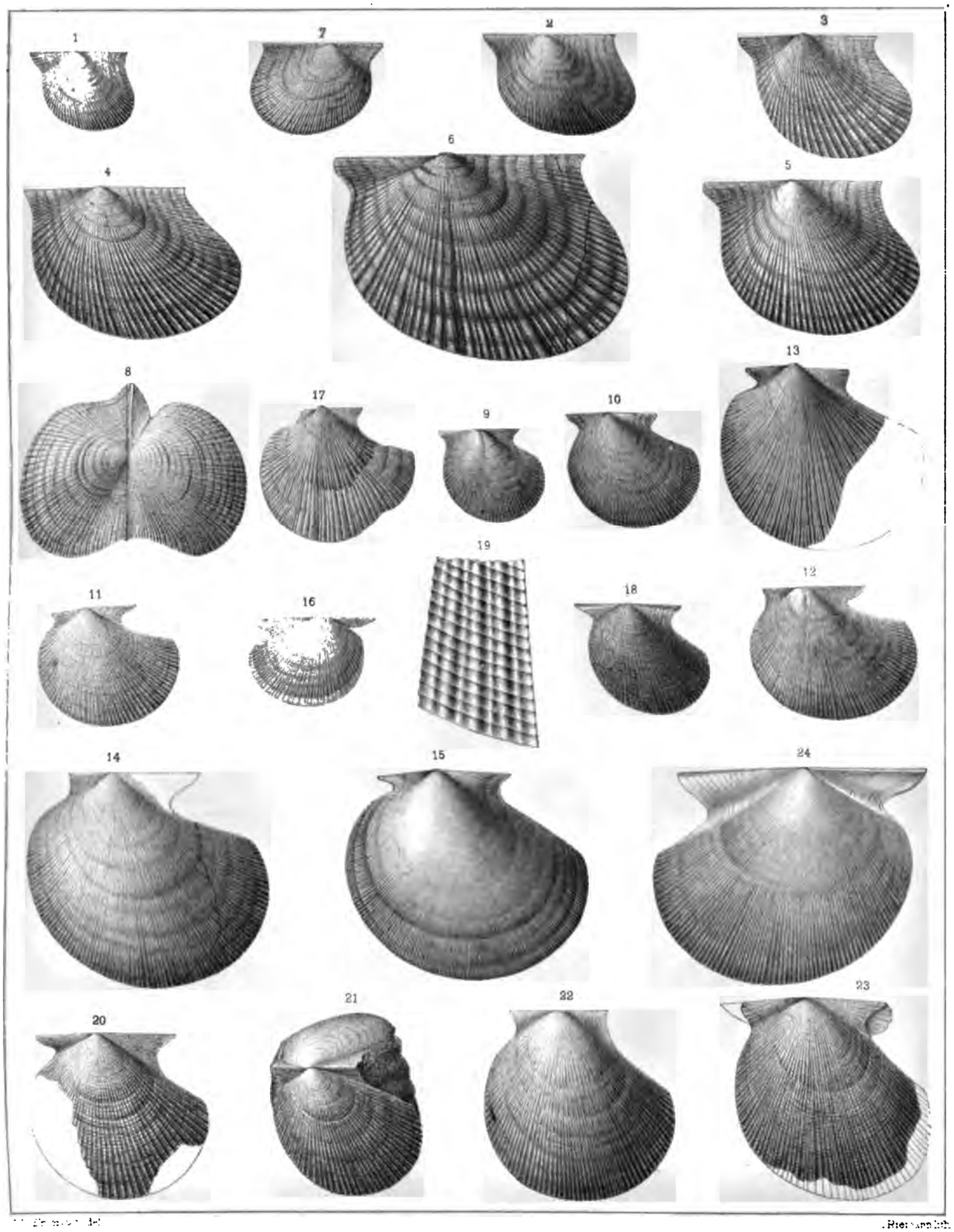
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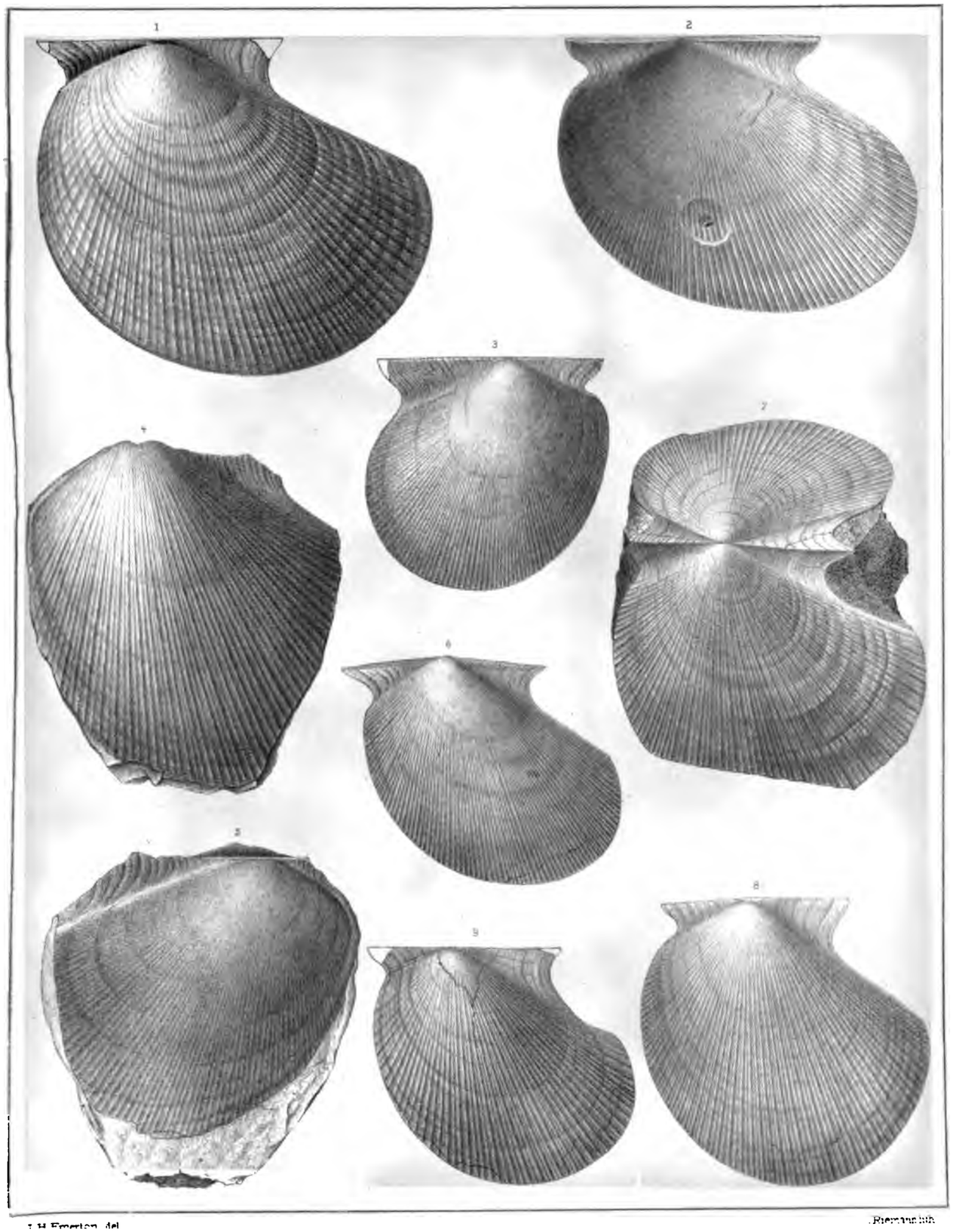

J. H. Emerton, del. Bierstadt lith.

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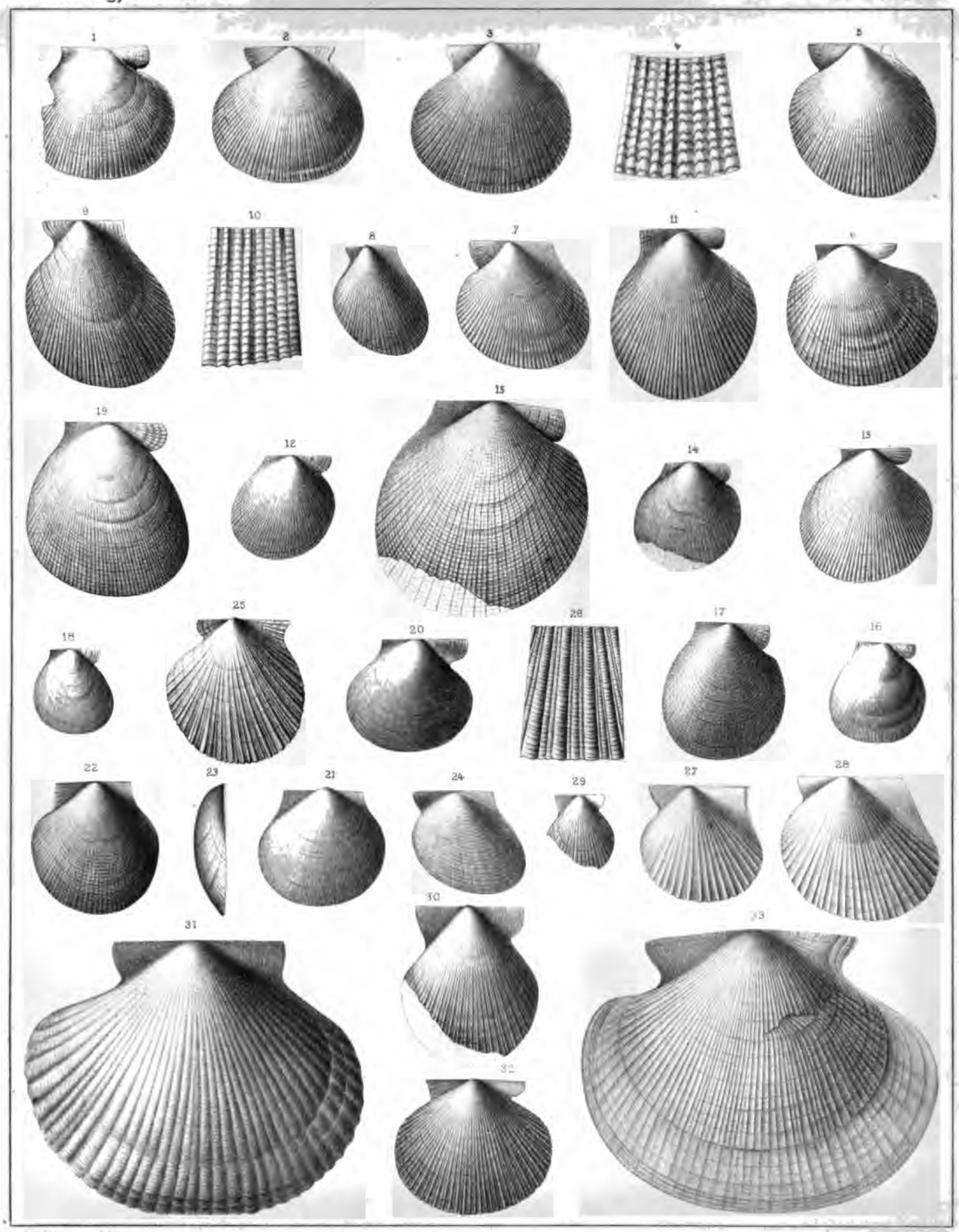

J.H. Emerton del.

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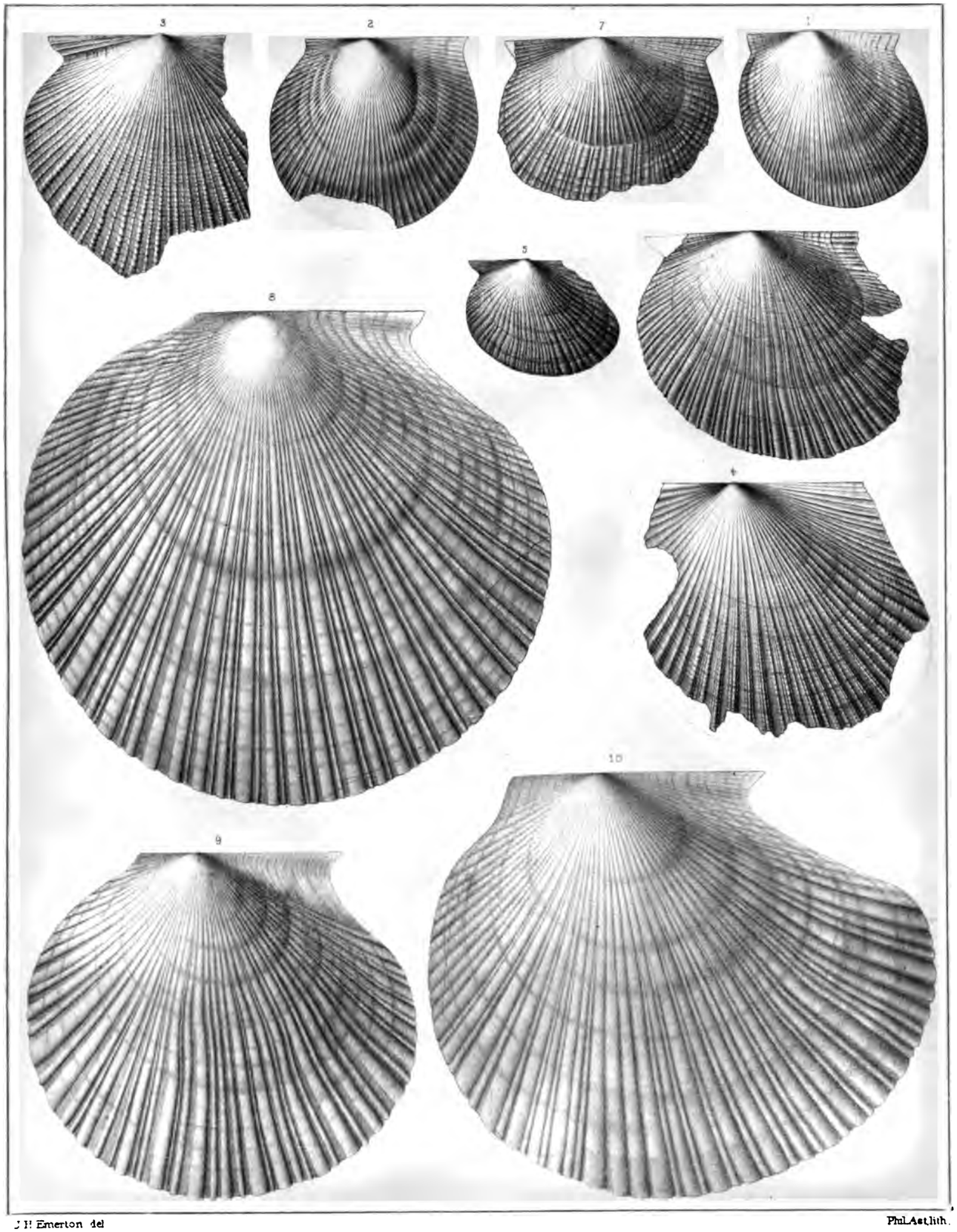

J. H. Emerton del. Phil. Ast. lith.

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CHEMUNG & WAVERLY GROUPS.

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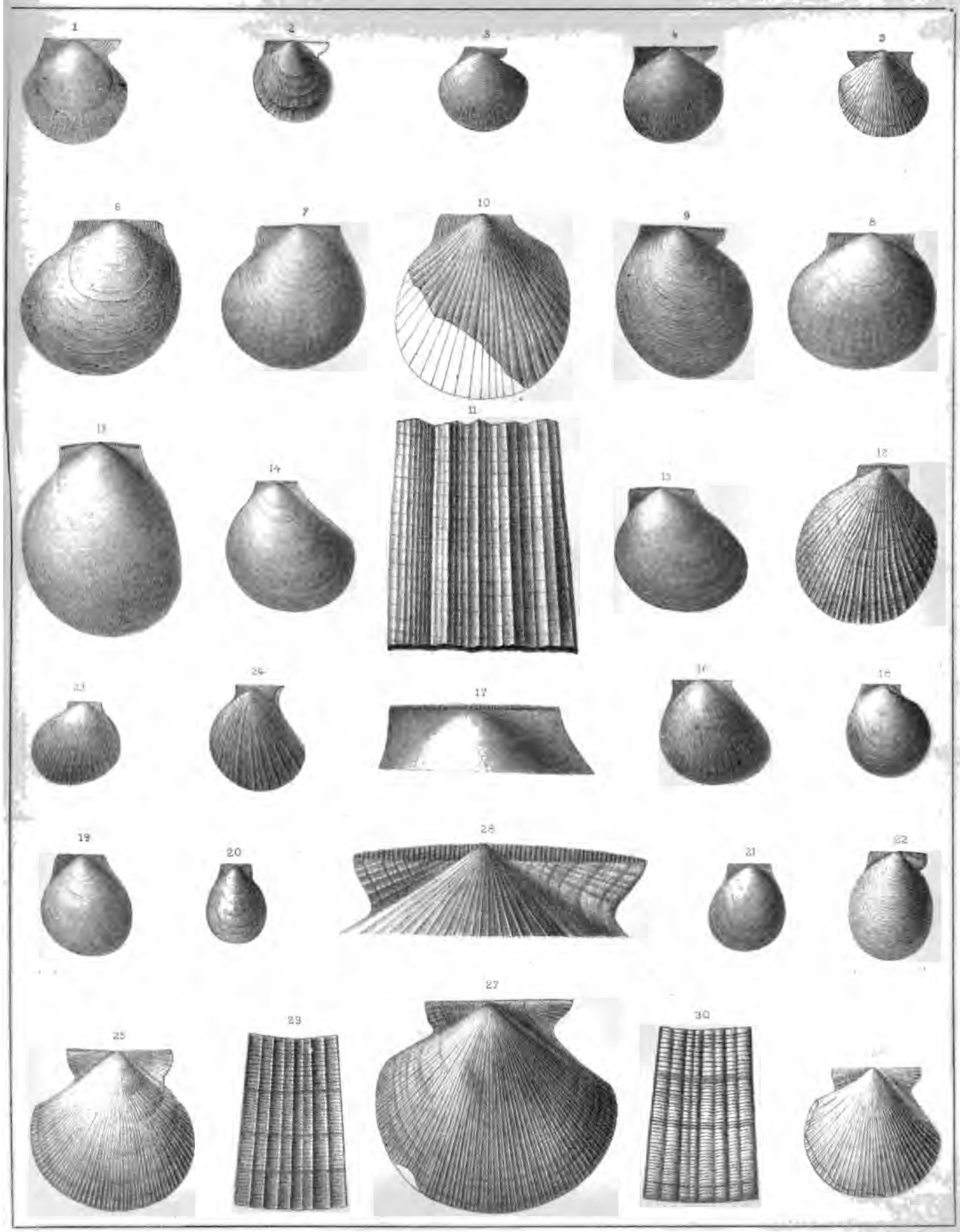

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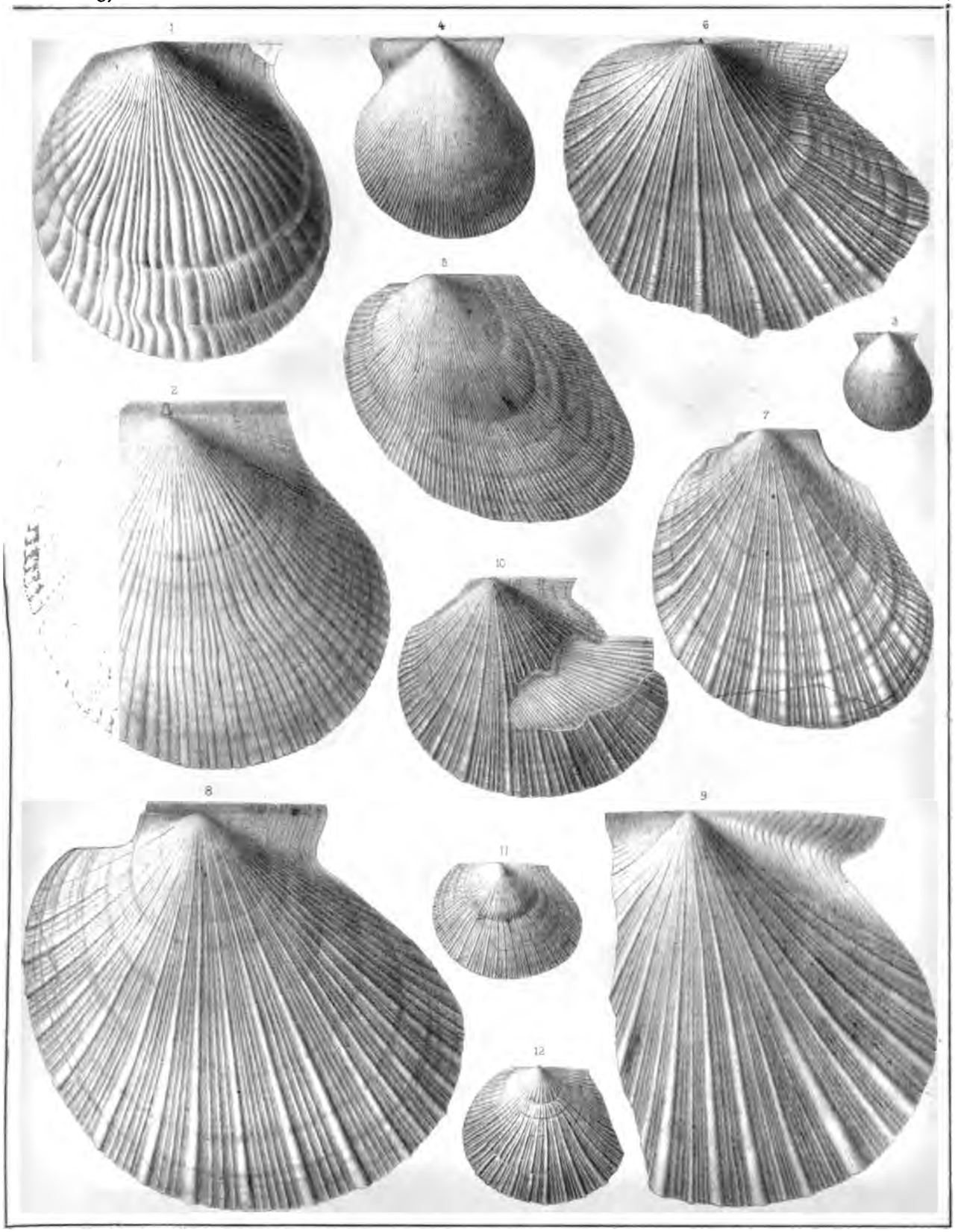

J.H. Emerton, del.

Bierstadt lith.

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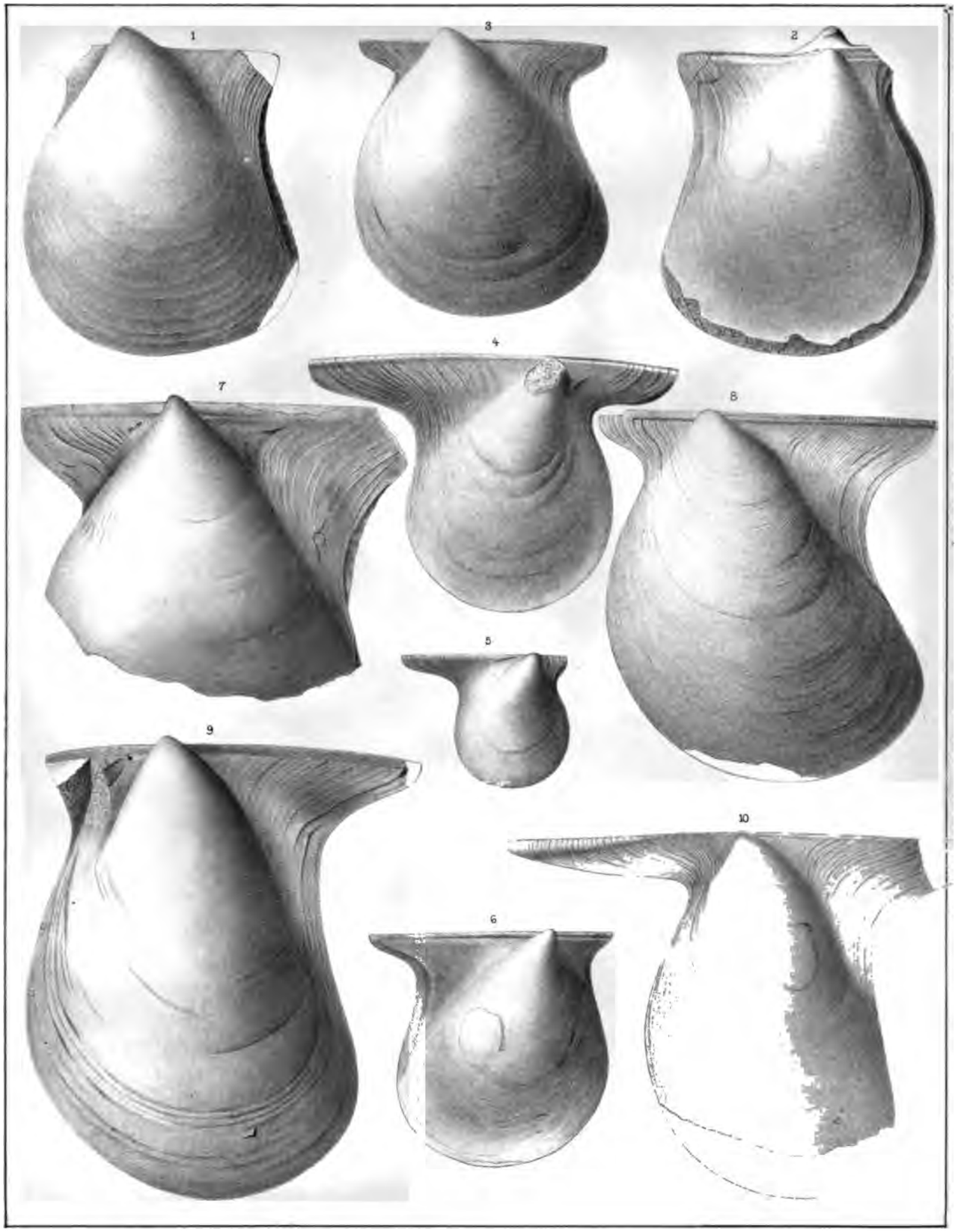

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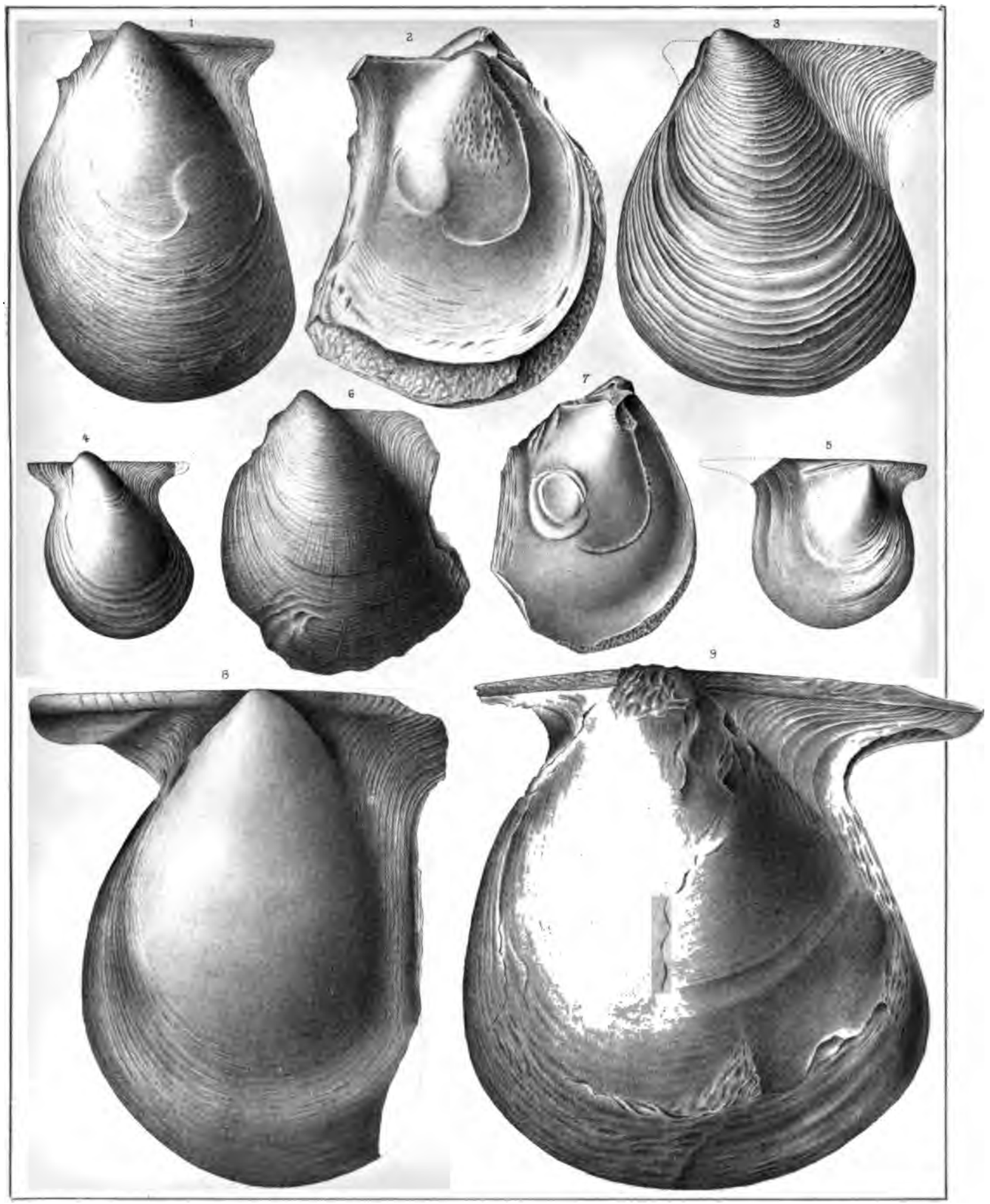

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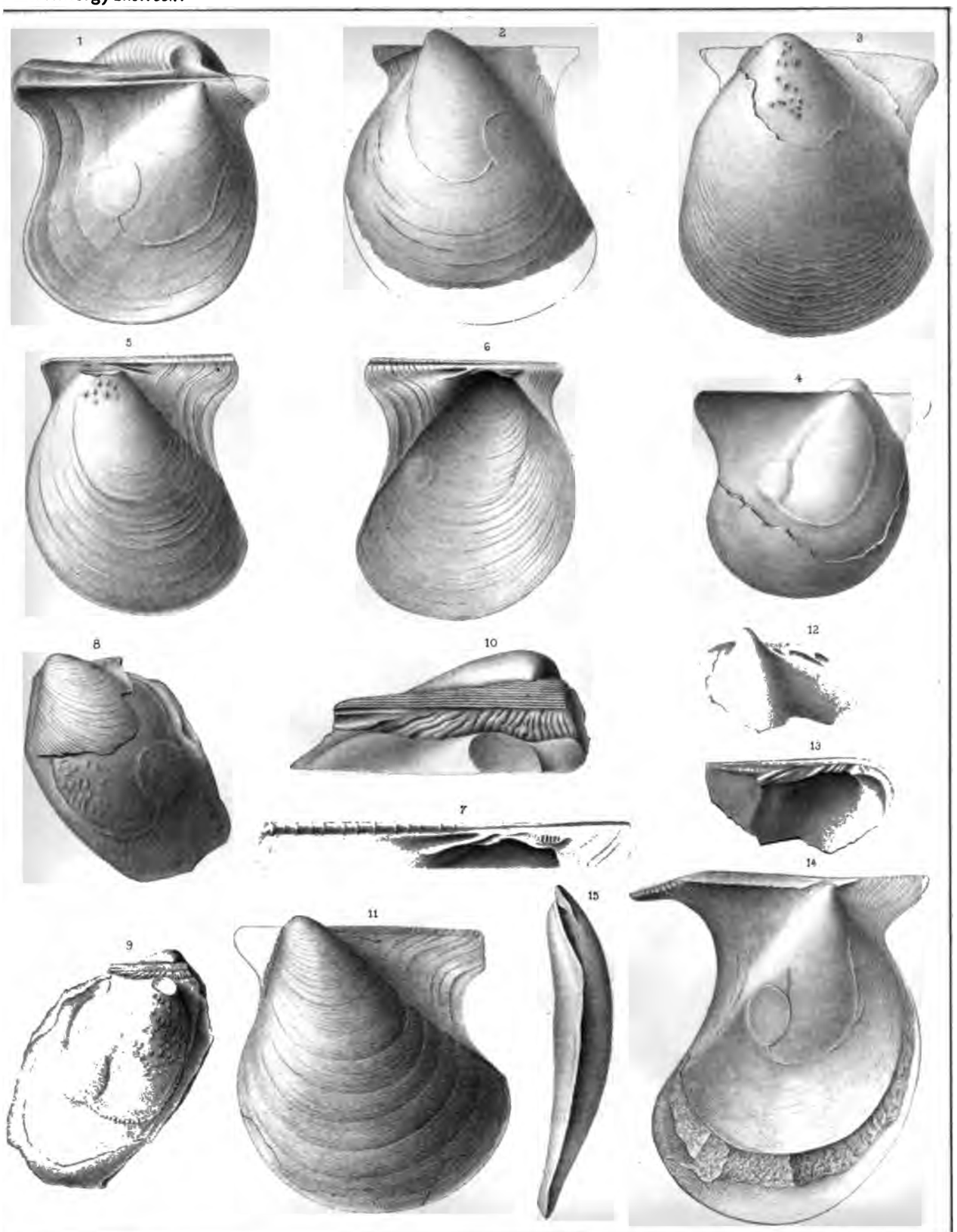

J.H.E. & G.B.S. del.

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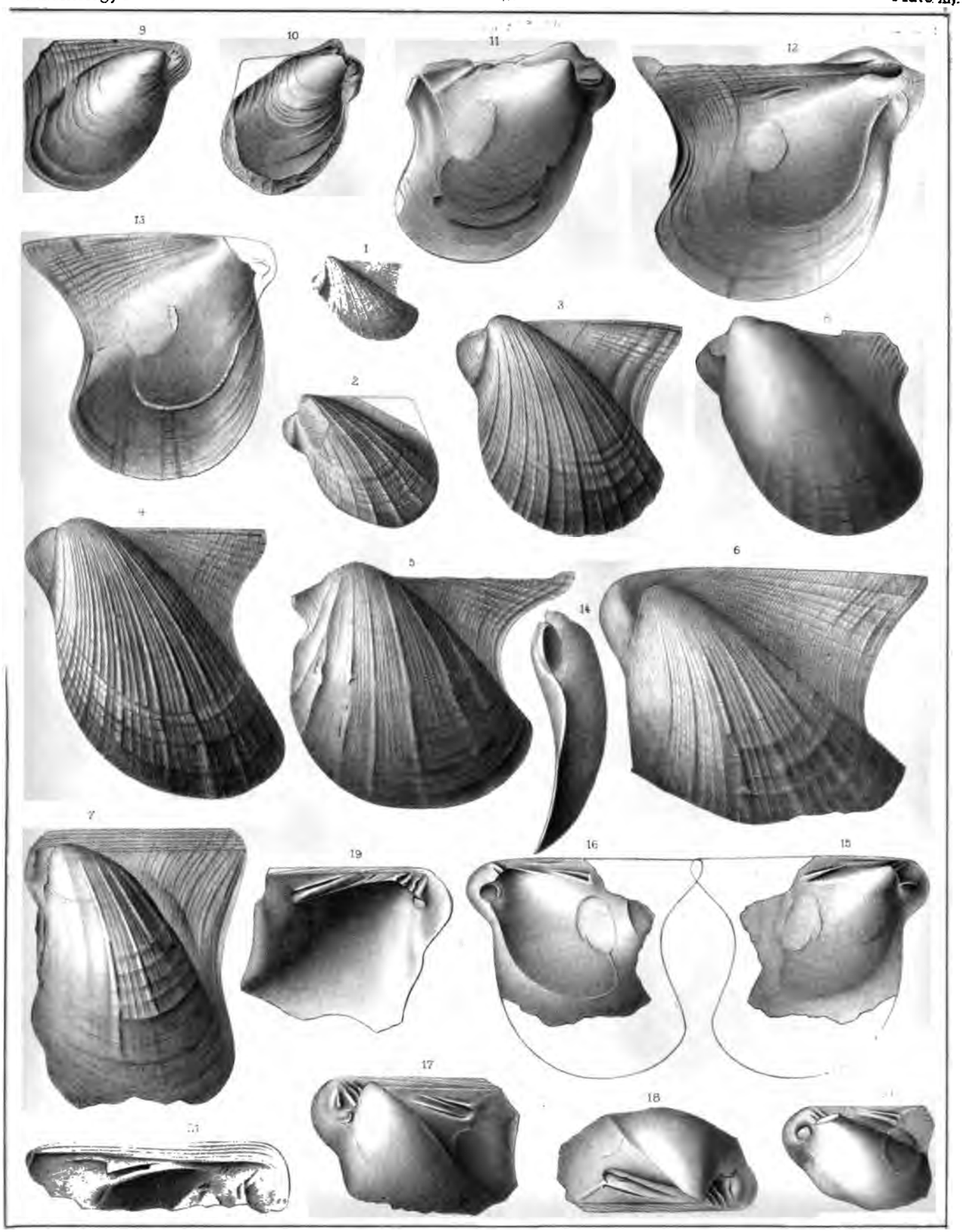

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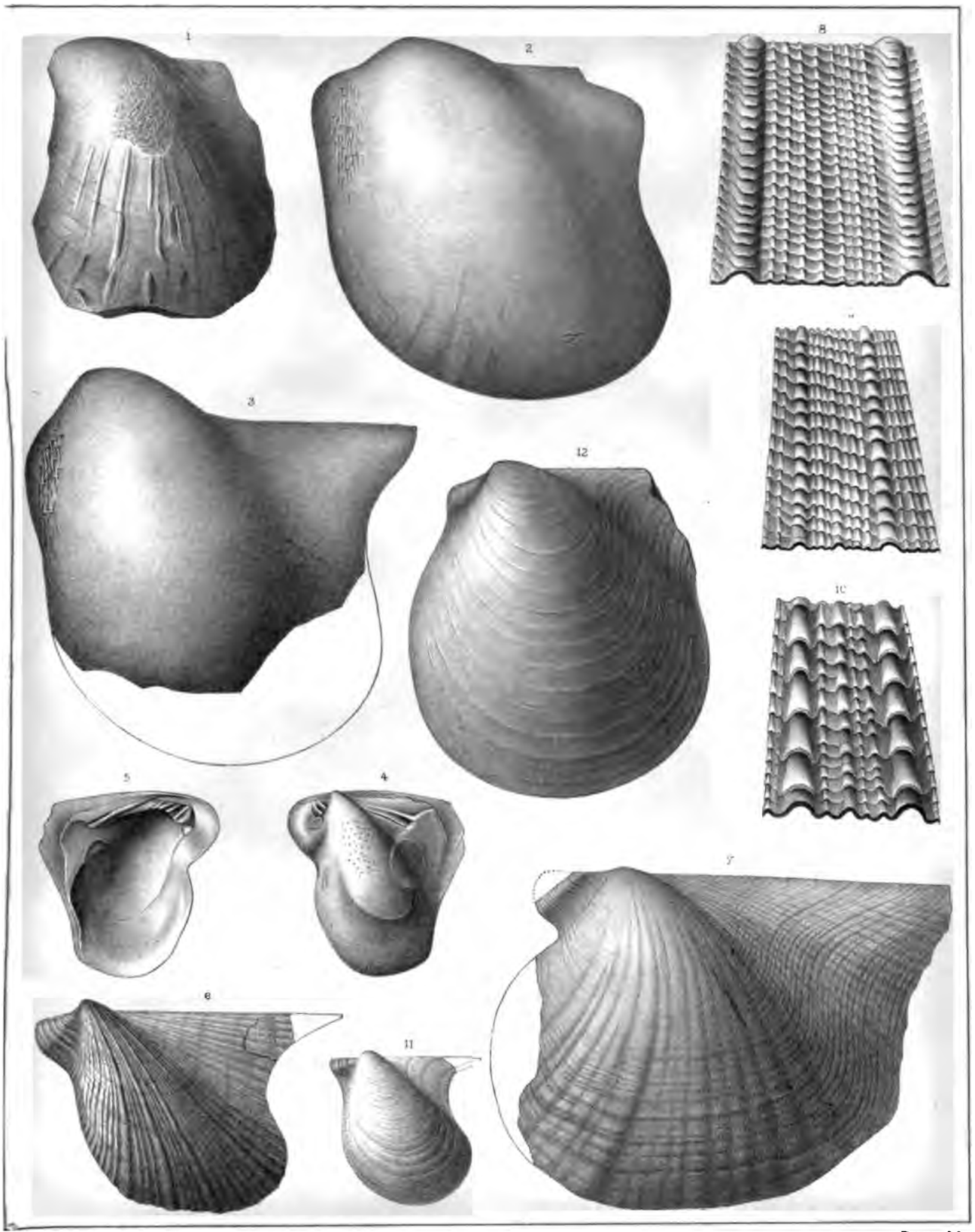

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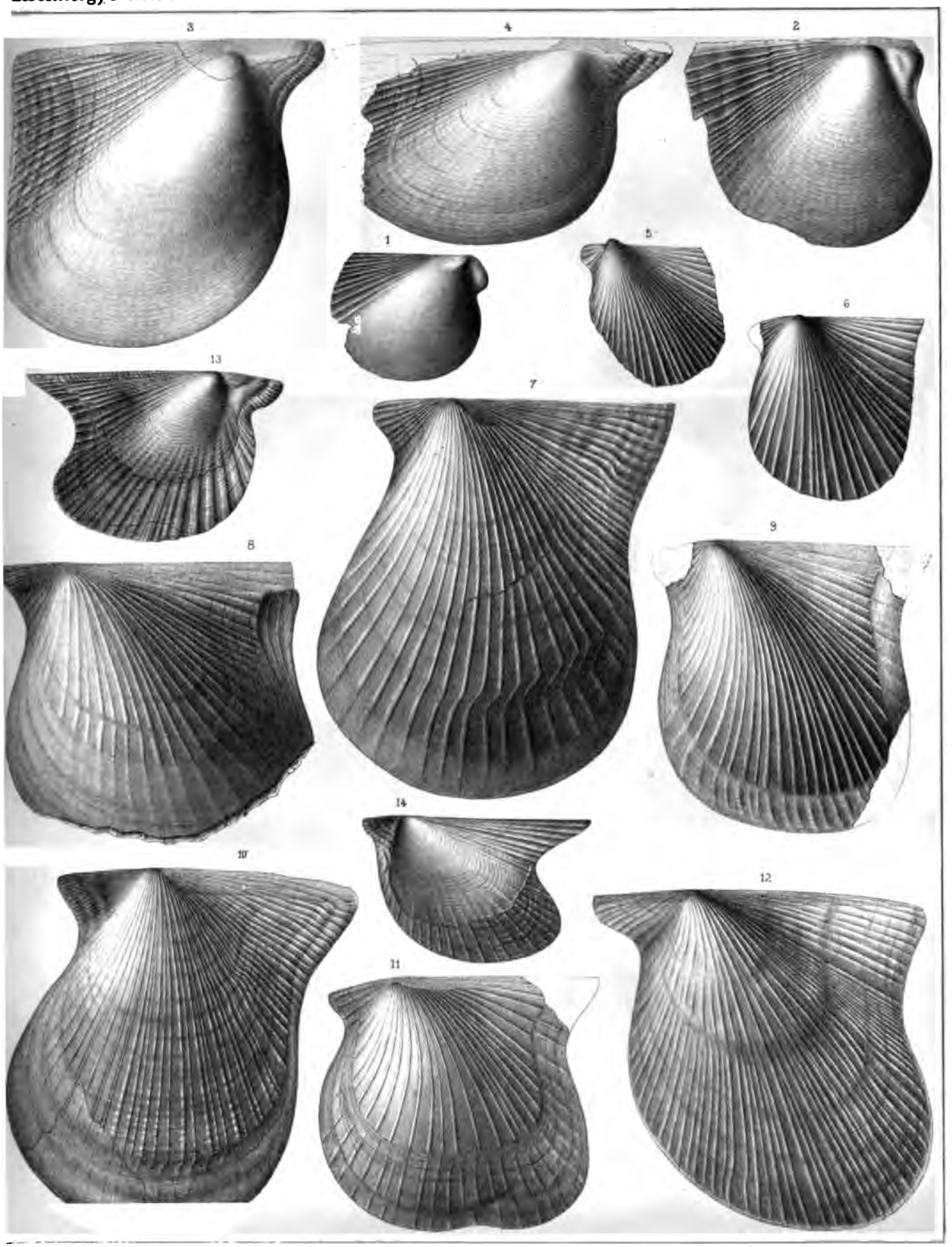

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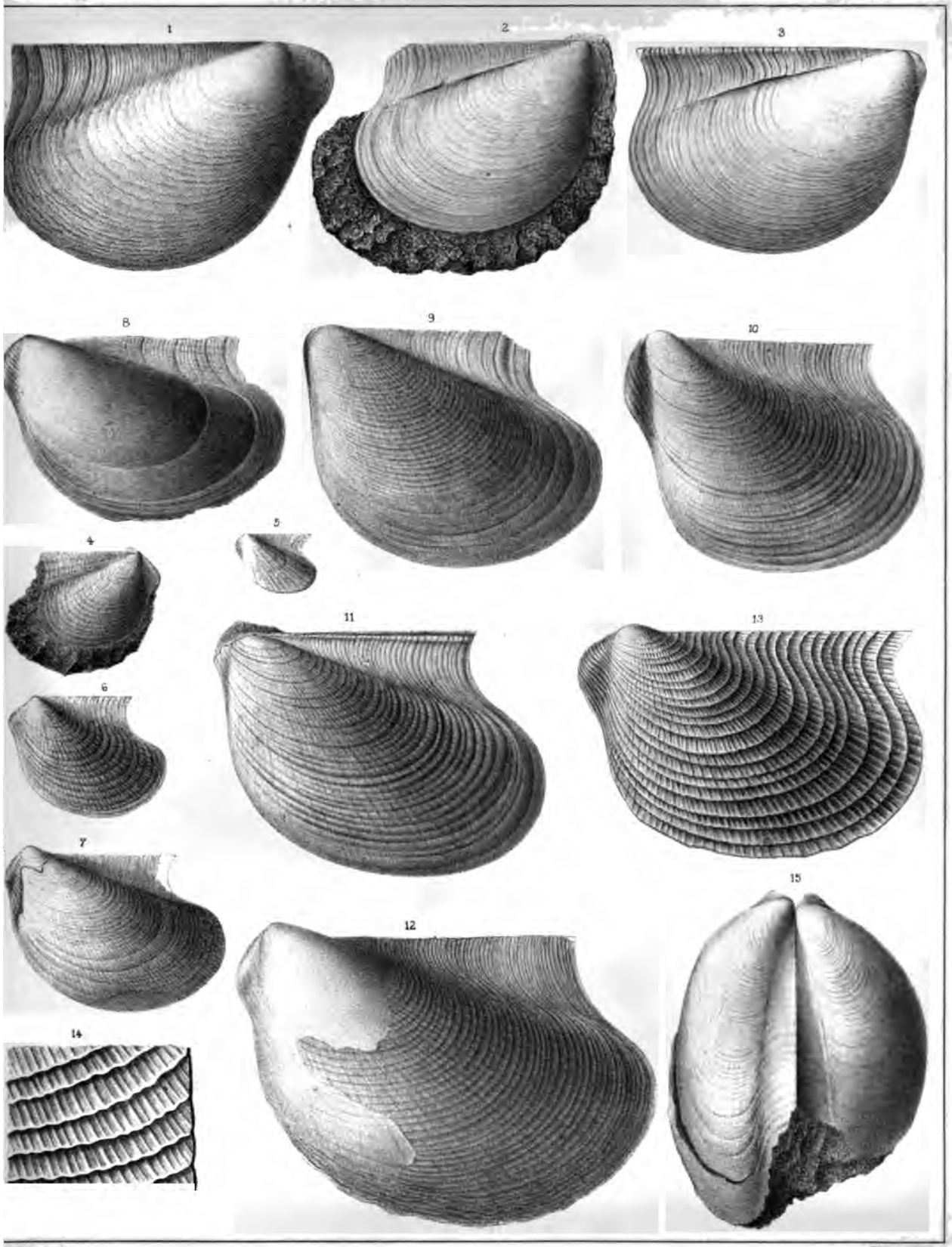

J. Emerton, del. Riemschneider.

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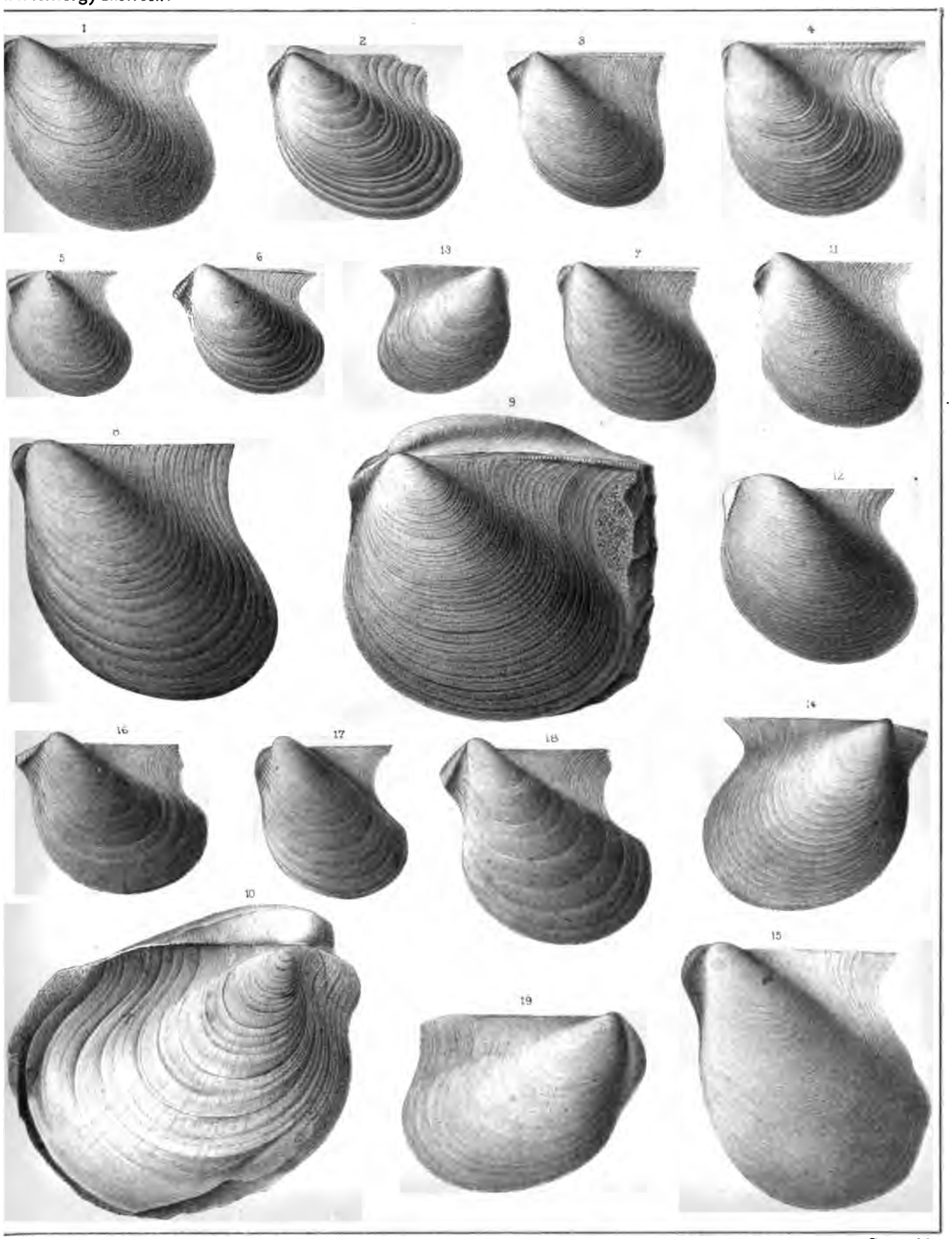

H. Emerton del. Ryemann lith.

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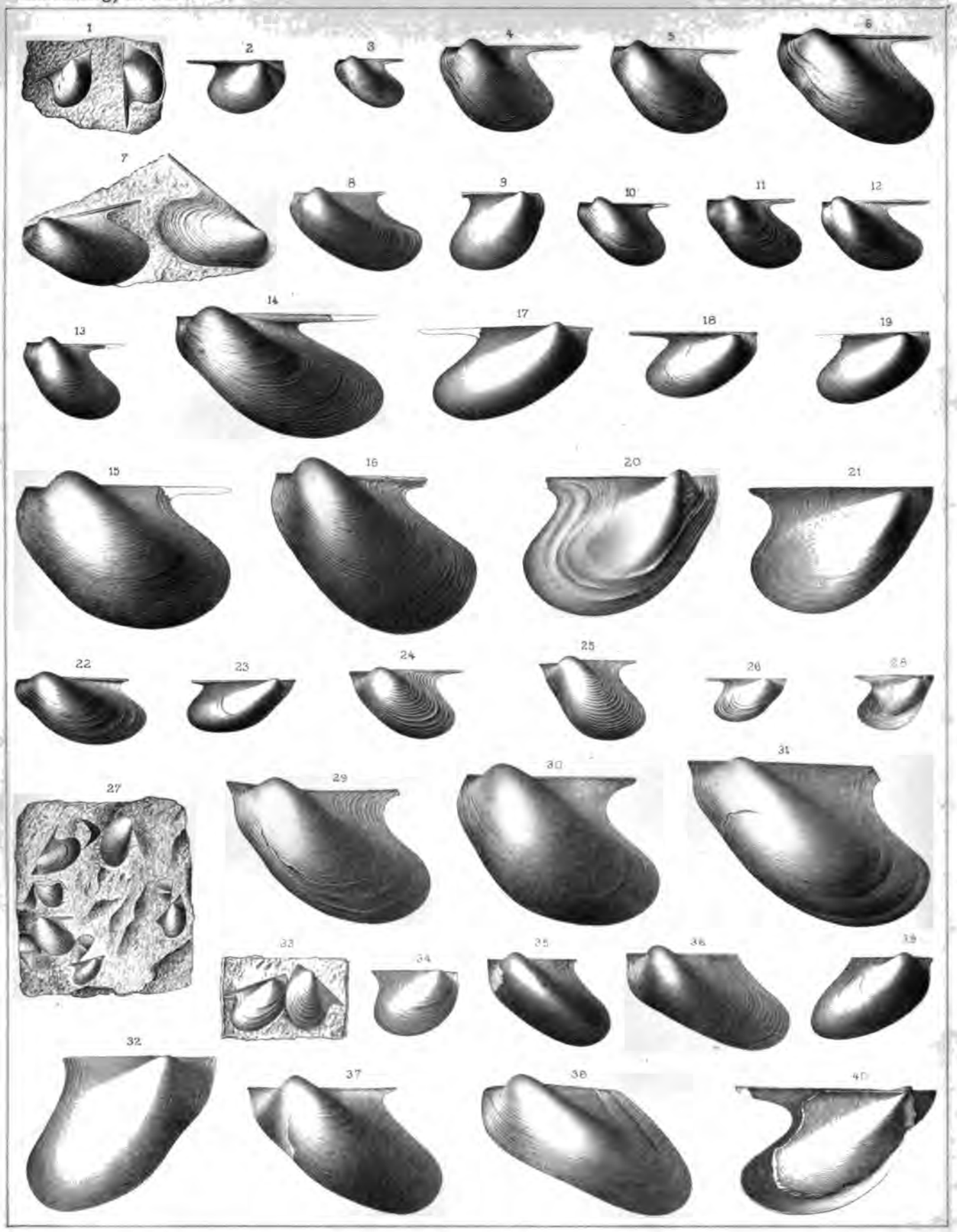
HAMILTON & CHEMUNG GROUPS.

(AVICULIDÆ.)



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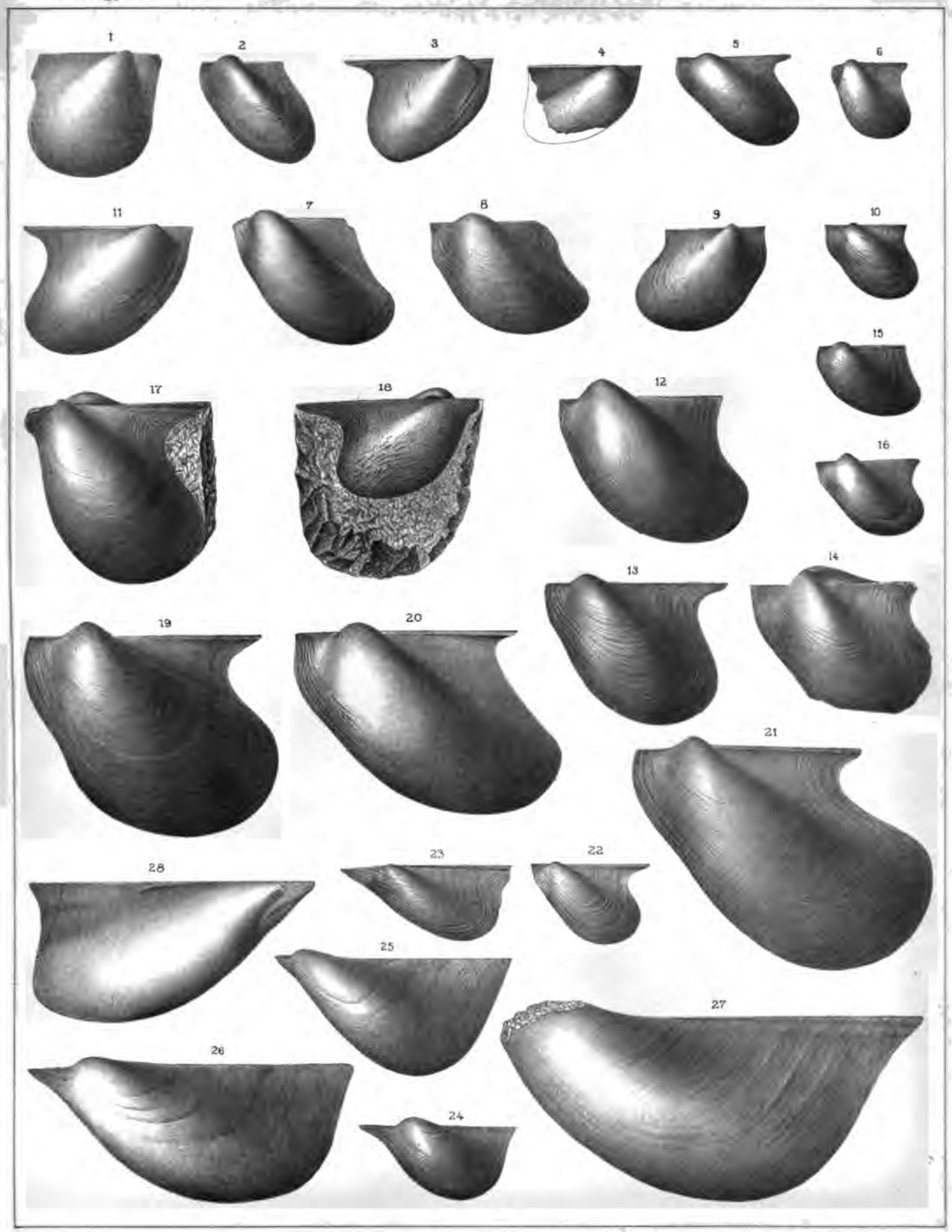

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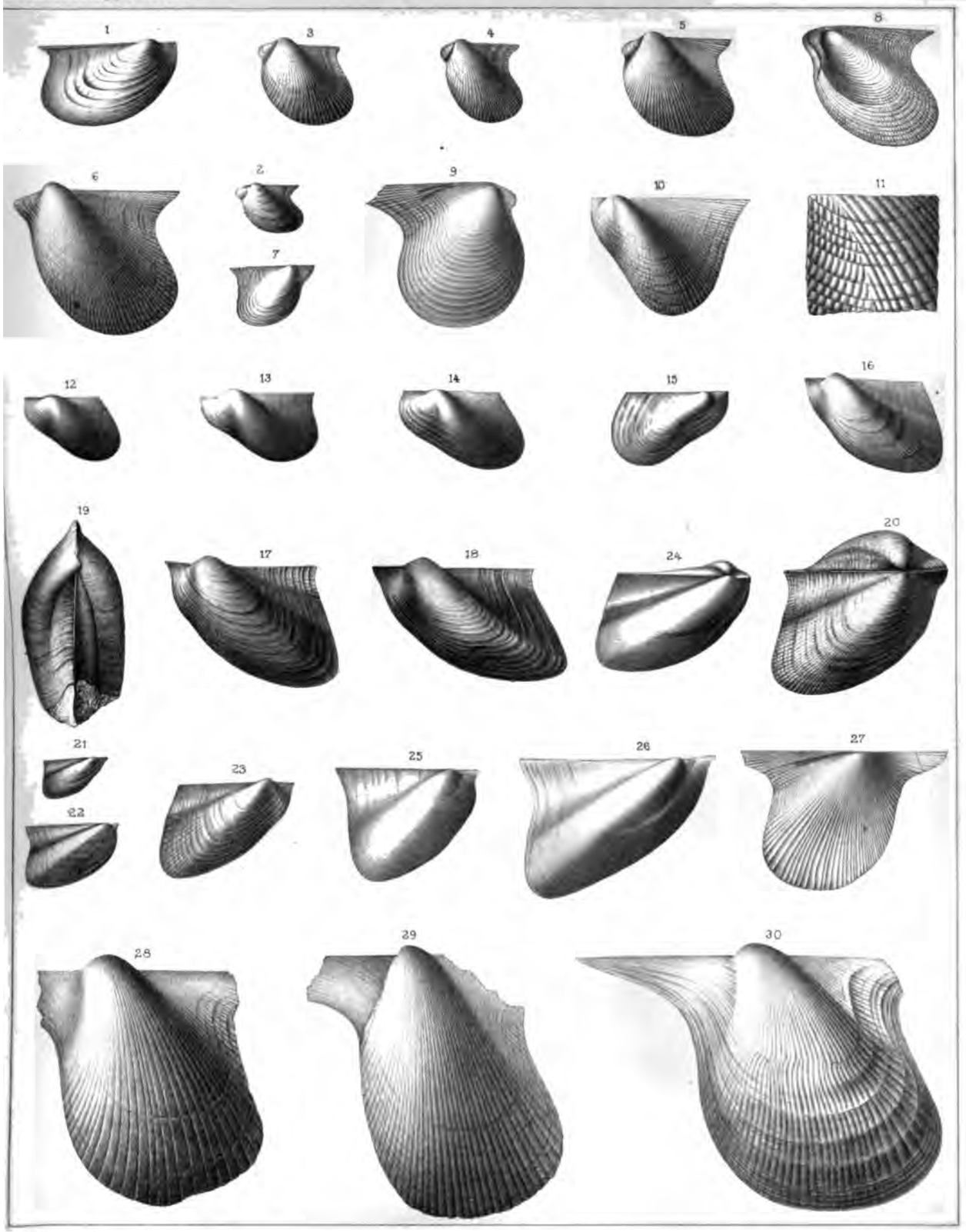
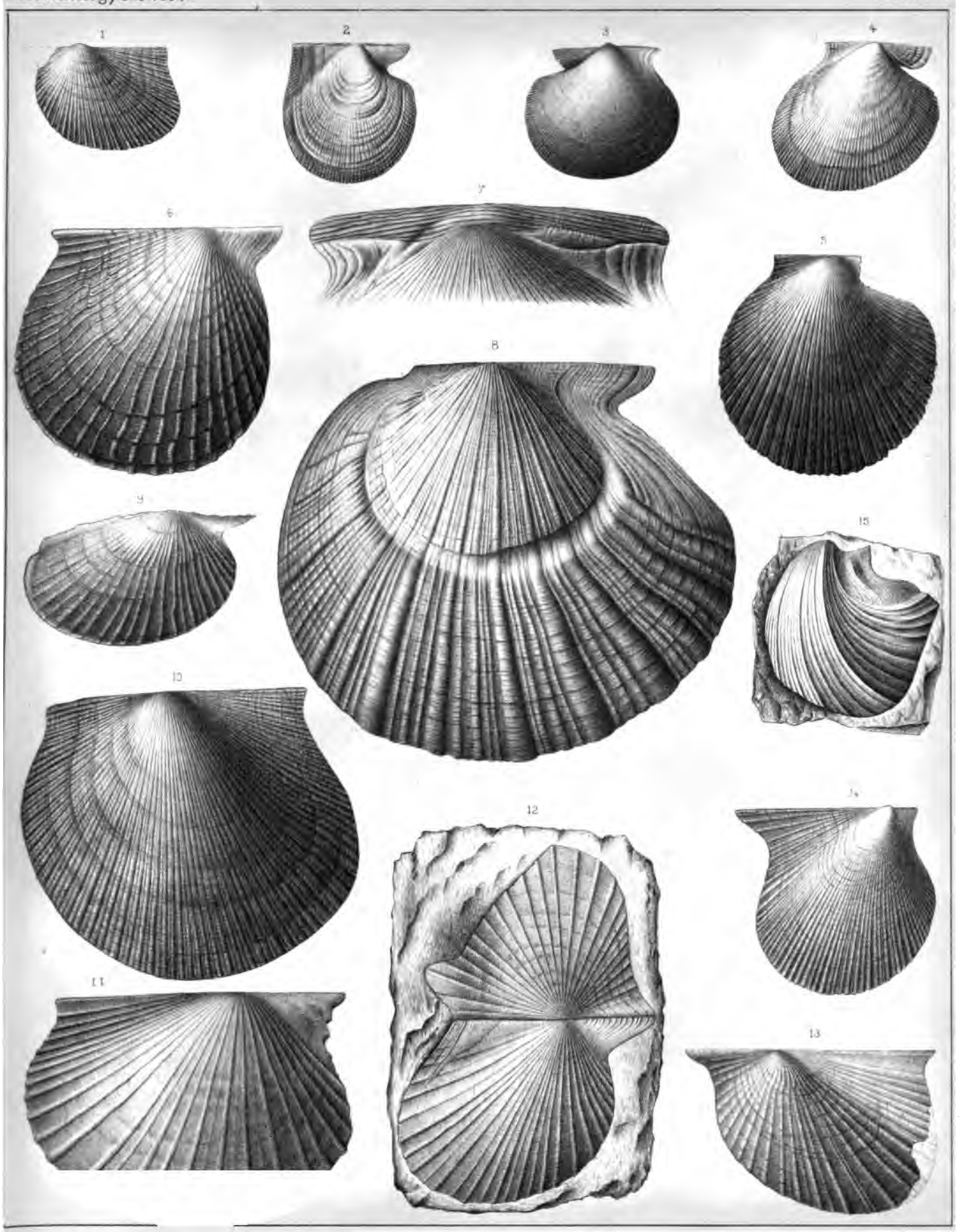


G.B. Simpson del. Phil. Ast. lith.

HAMILTON & CHEMUNG GROUPS.

(PECTINIDÆ.)



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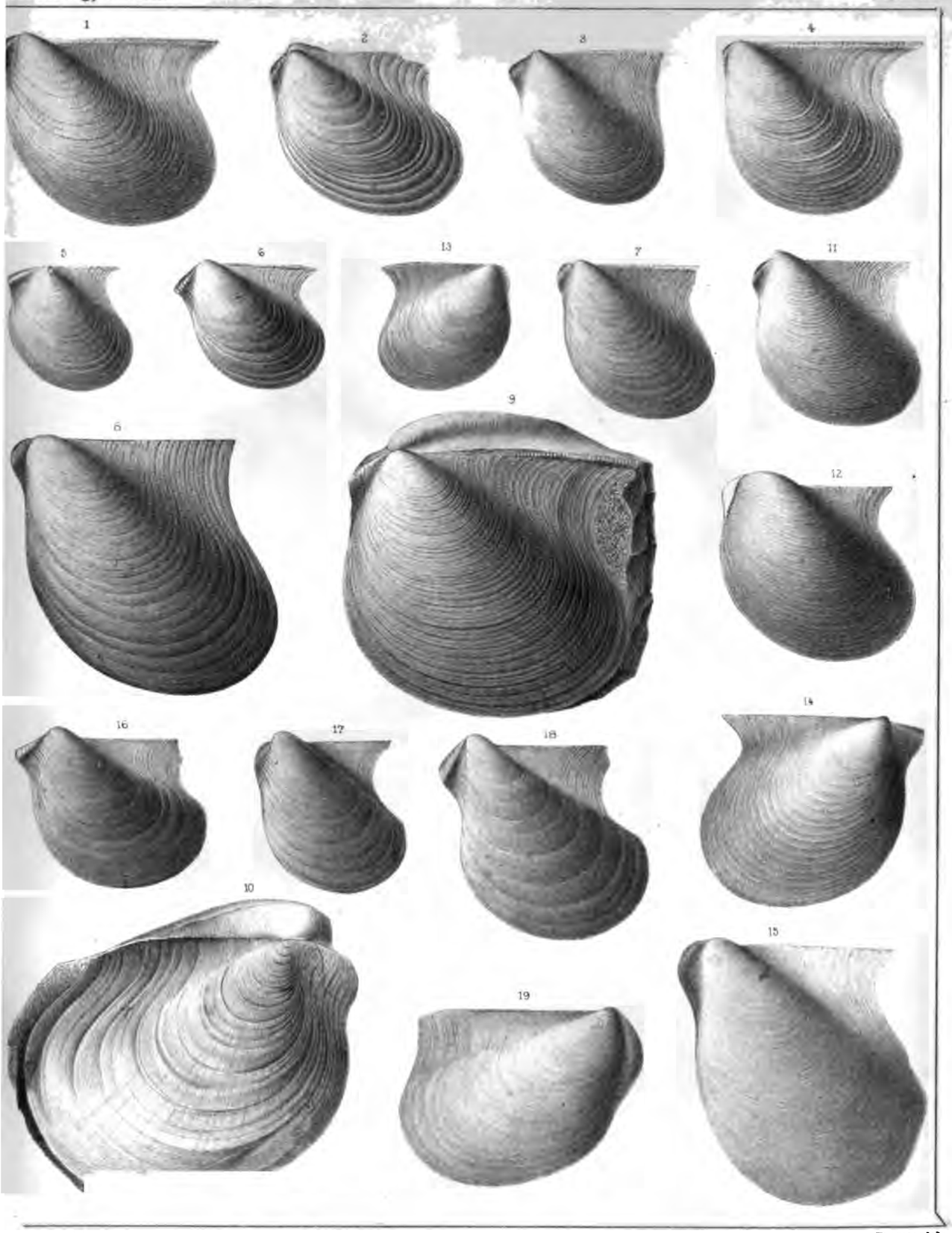

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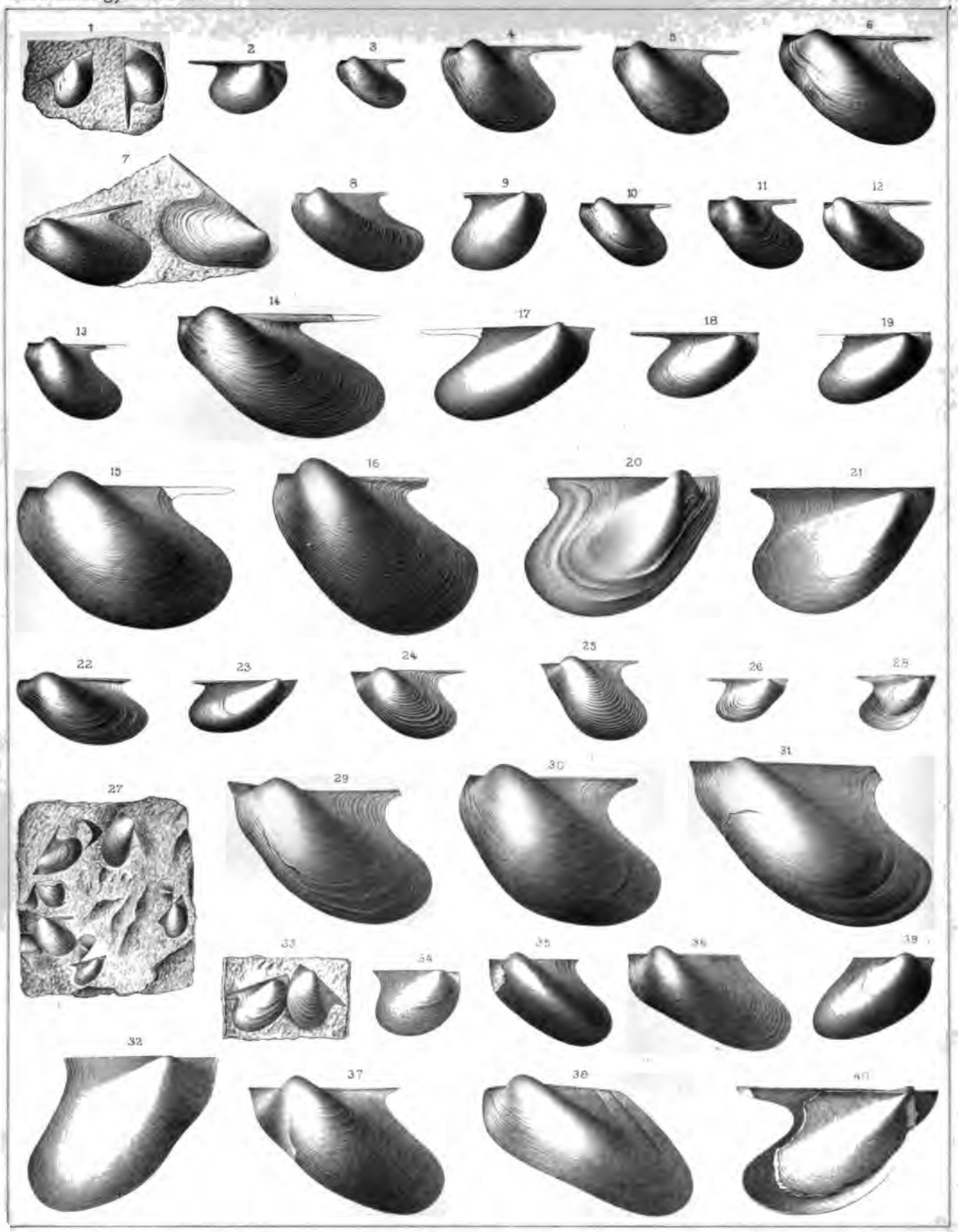
HAMILTON & CHEMUNG GROUPS.

(AVICULIDÆ.)

Palæontology N.Y. Vol. V. Plate XXI.



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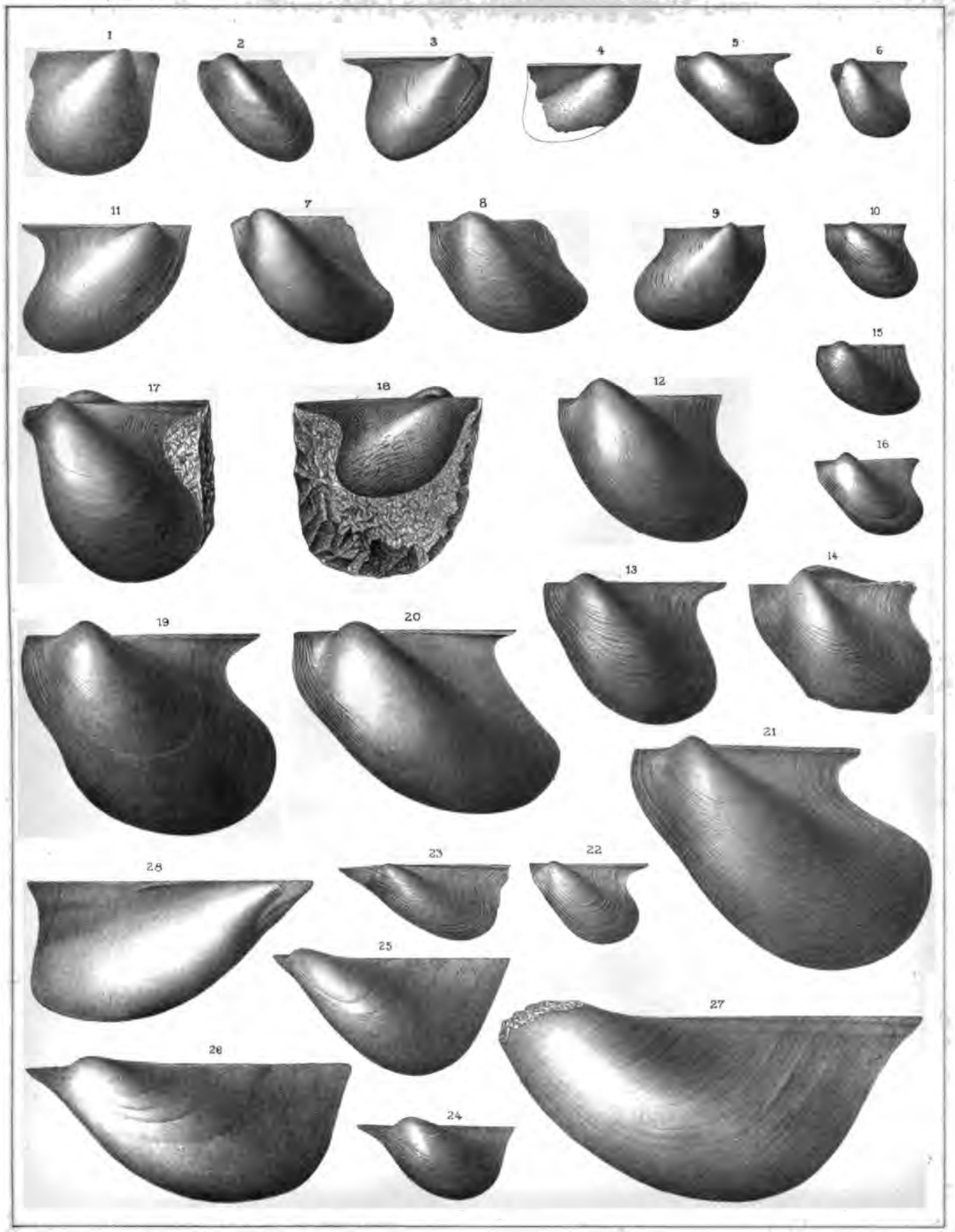

G.B. Simpson del.

Riemann lith.

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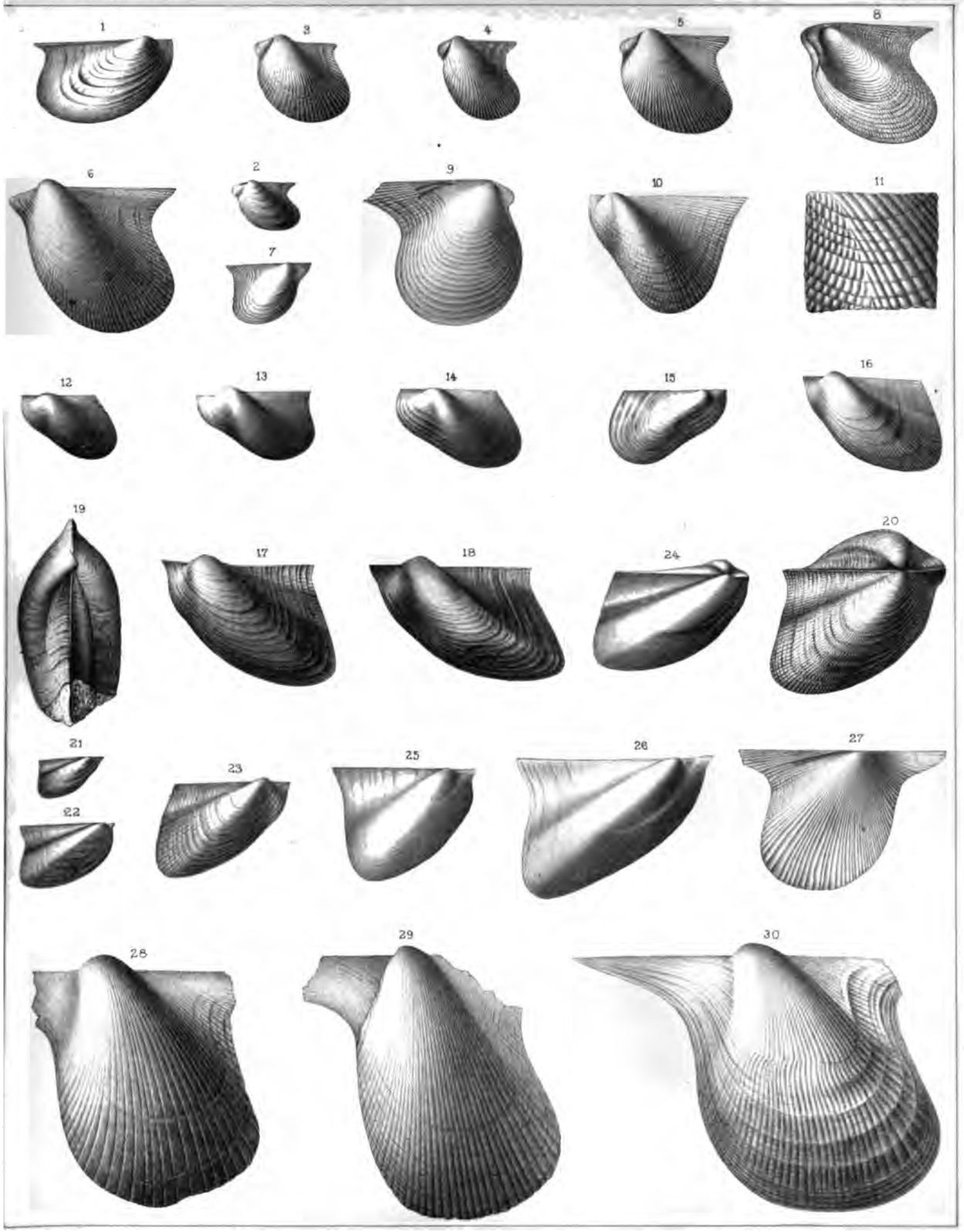

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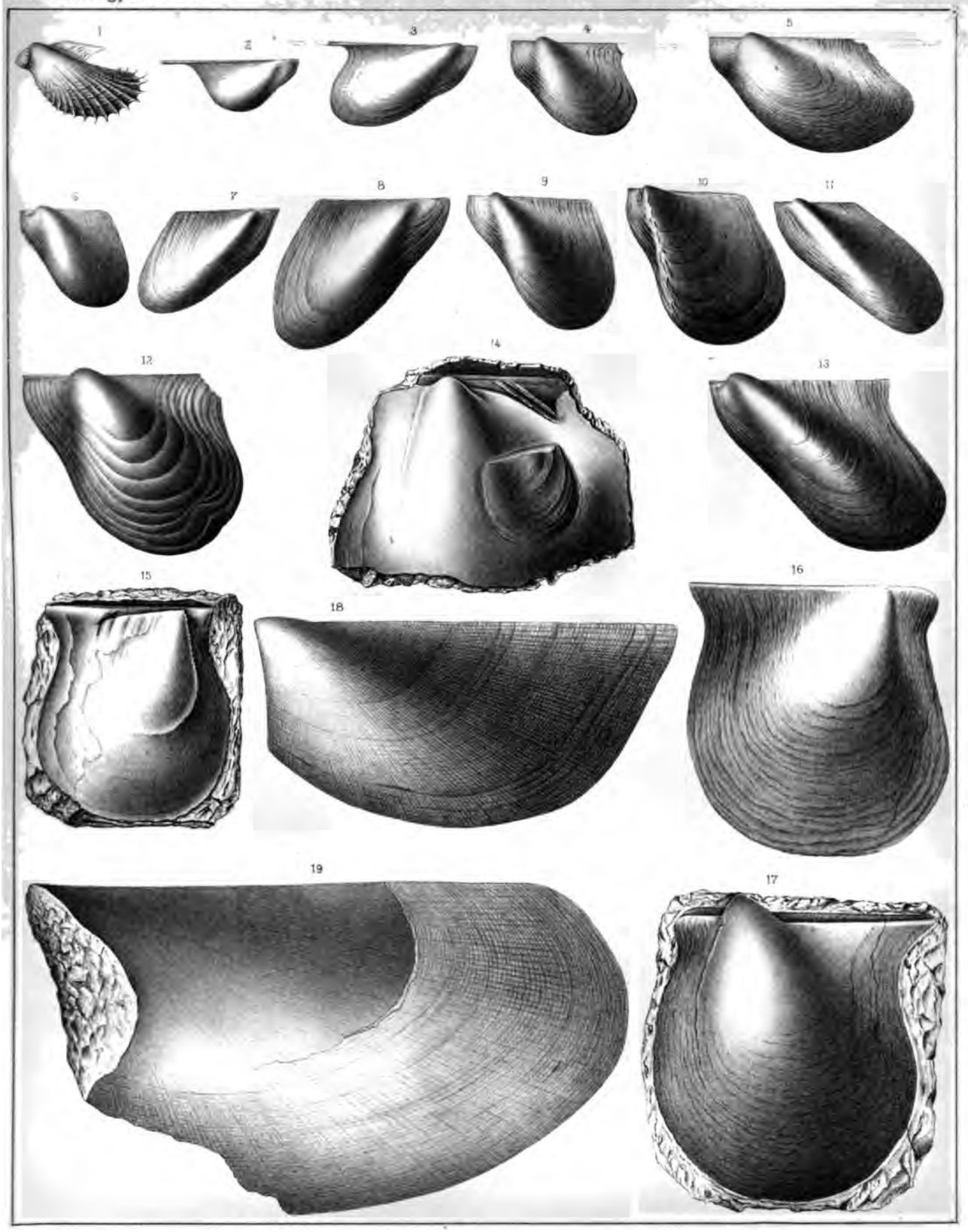
UPPER HELDERBERG HAMILTON & CHEMUNG GROUPS.

(AVICULIDÆ.)



H.M. Martin del.

Phil. Asylum

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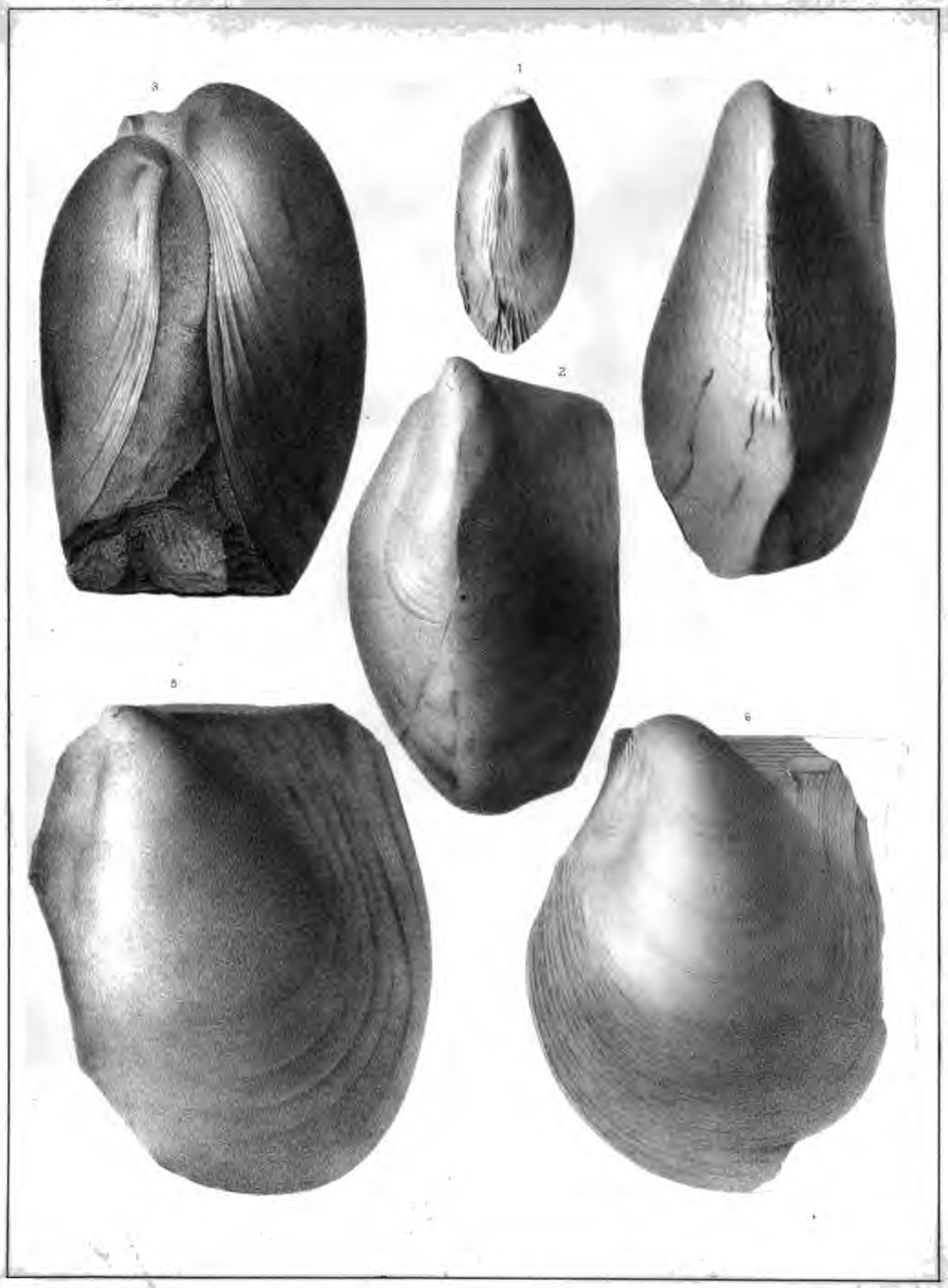
HAMILTON GROUP.

(AMBONYCHIIDÆ.)



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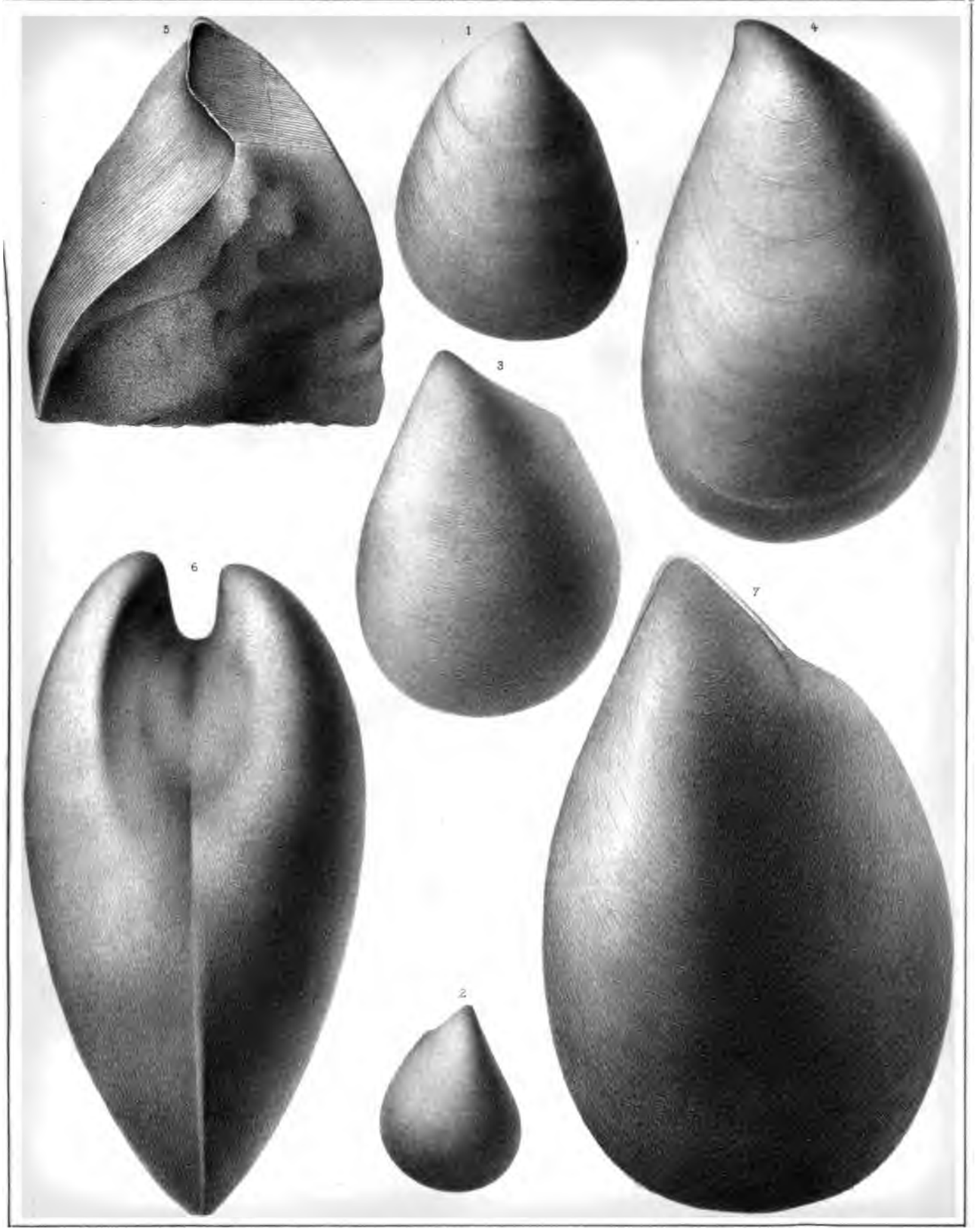
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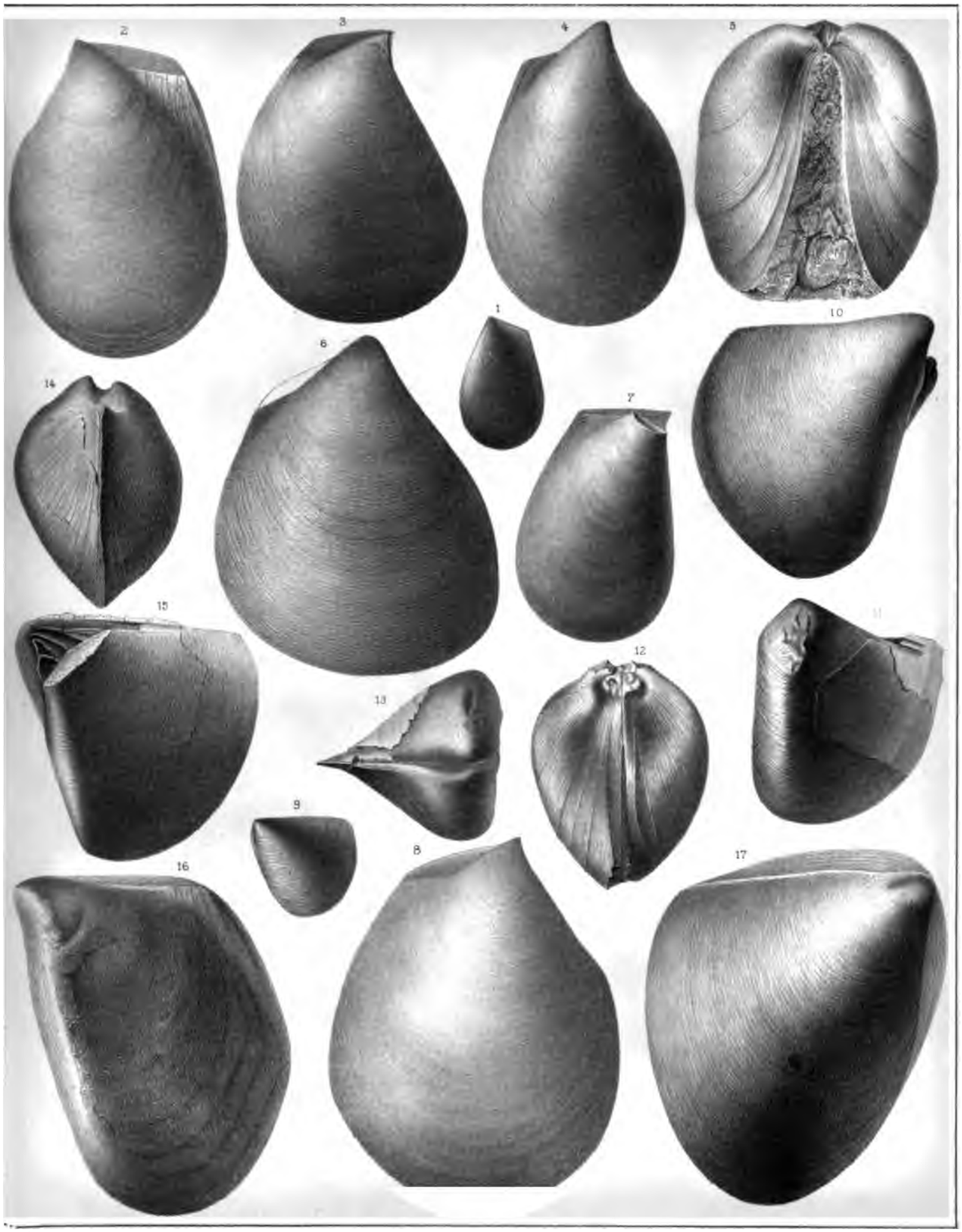
HAMILTON GROUP.

(AMBONYCHIIDÆ.)



W. Hall del.

Swinton, lith.

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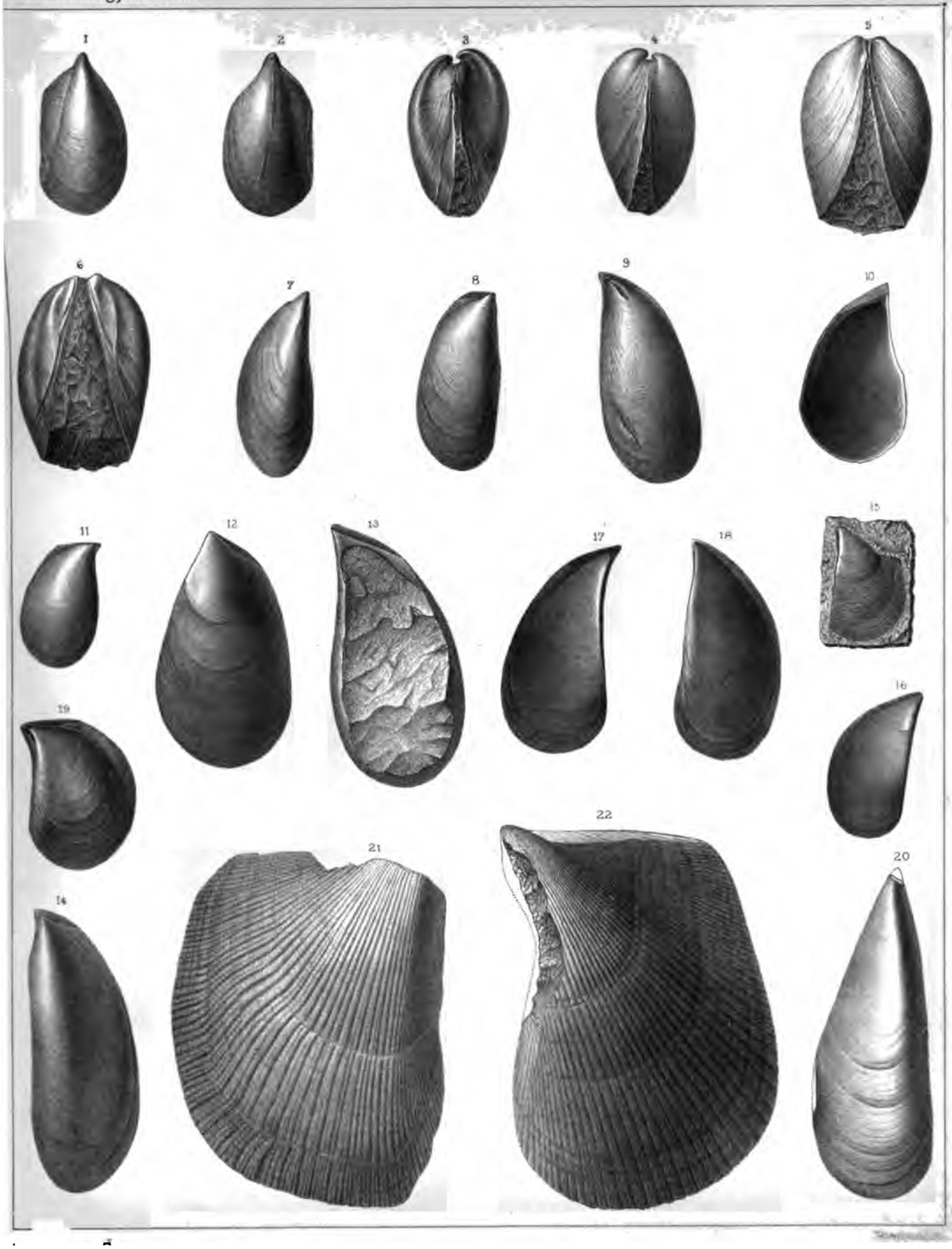
CHEMUNG GROUP.

(AMBONYCHIIDÆ.)



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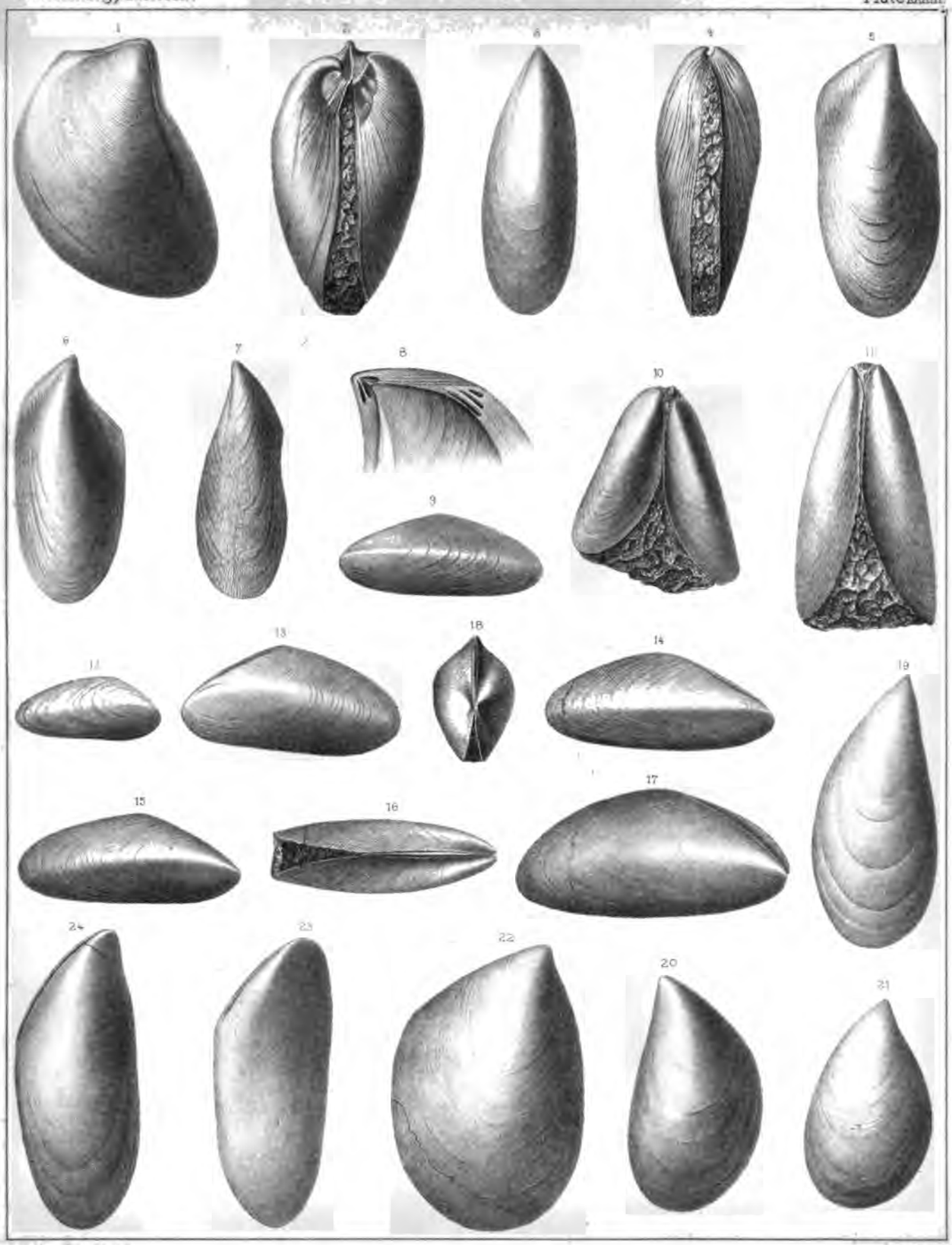
HAMILTON & CHEMUNG GROUPS, etc

(AMBONYCHIIDÆ & MYTILIDÆ.)



J.W.H. & H.M.M. del.

Piemsinlith.

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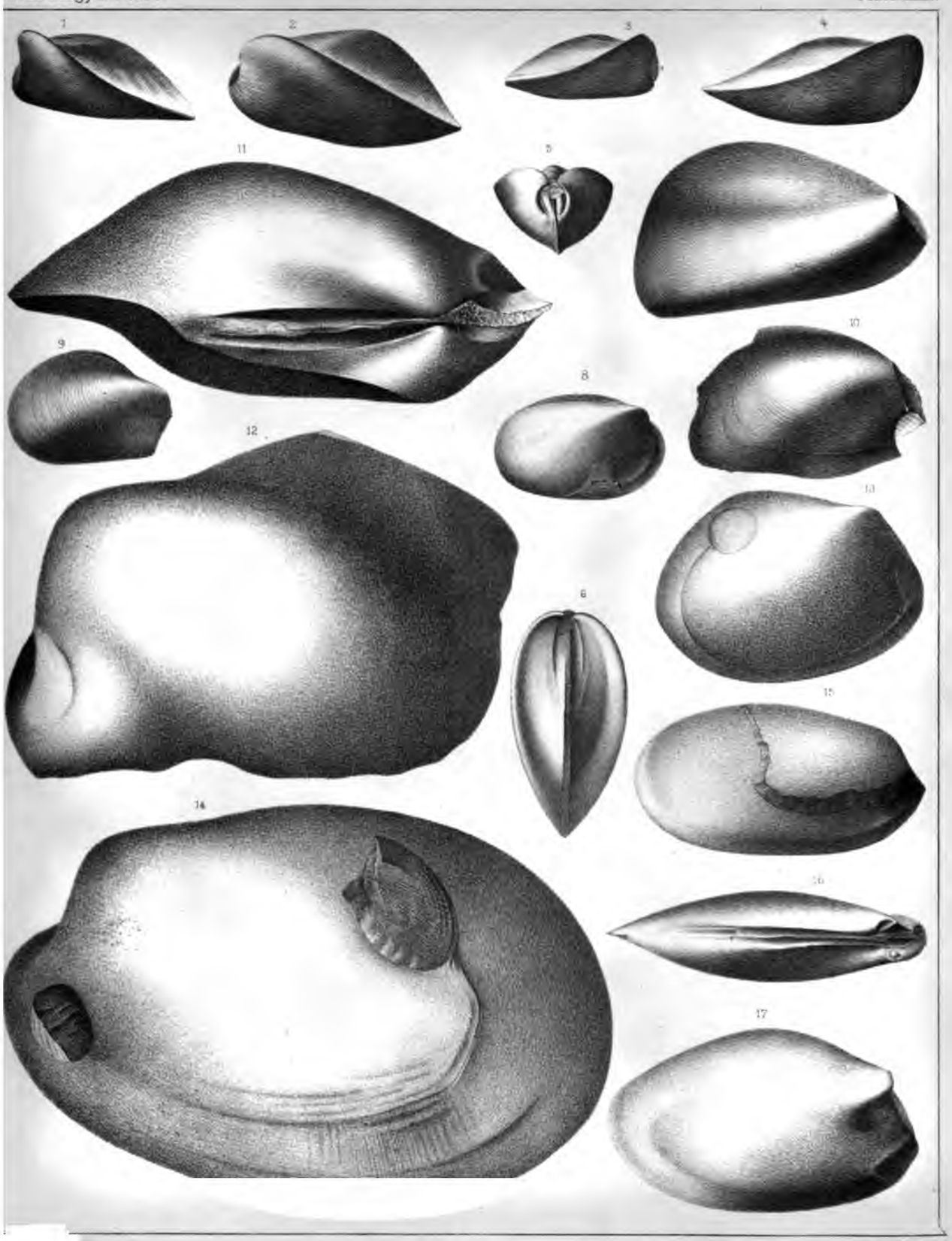
UPPER HELDERBERG GROUP.

(MODIOMORPHIDÆ.)



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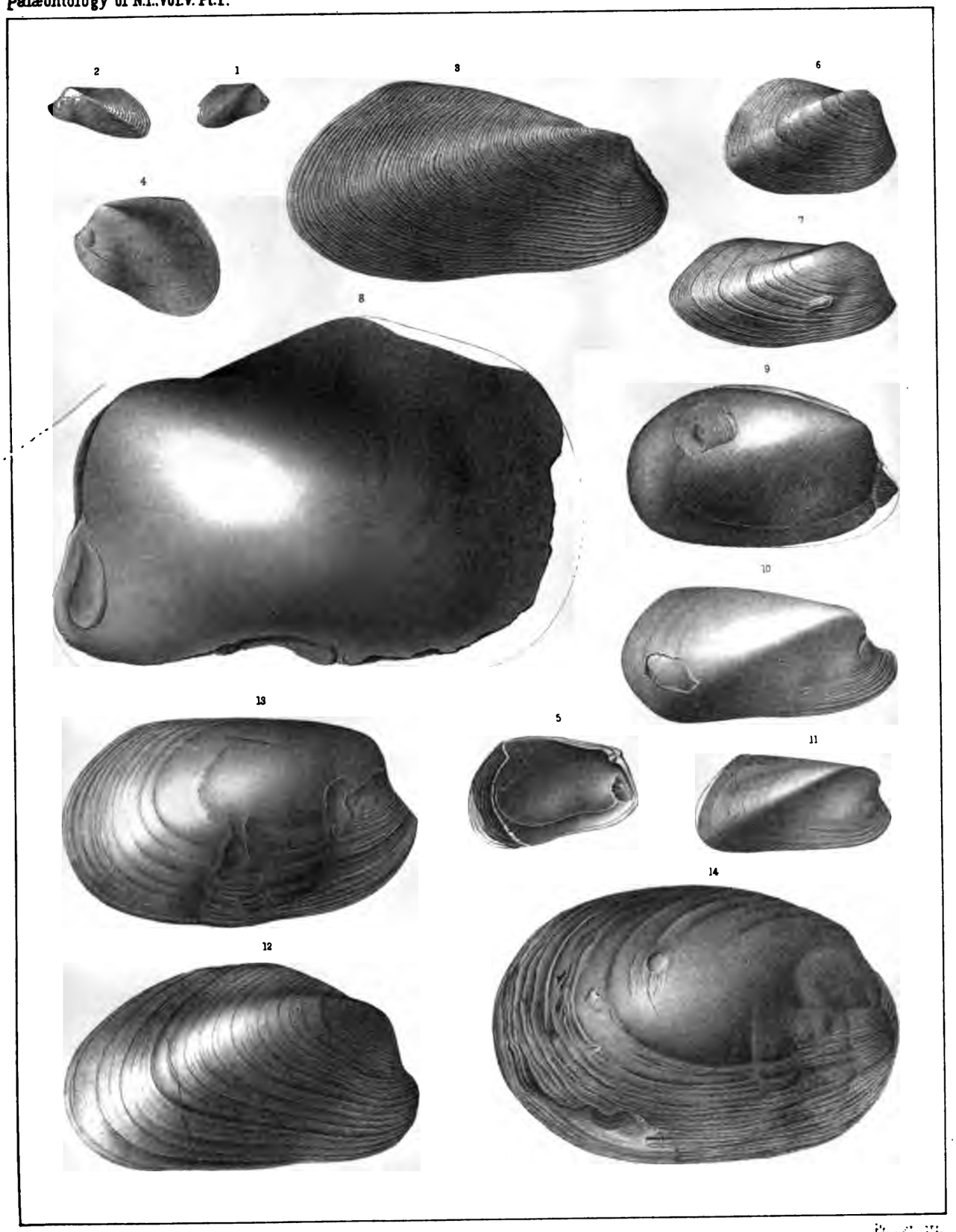

E.Emmons lith.

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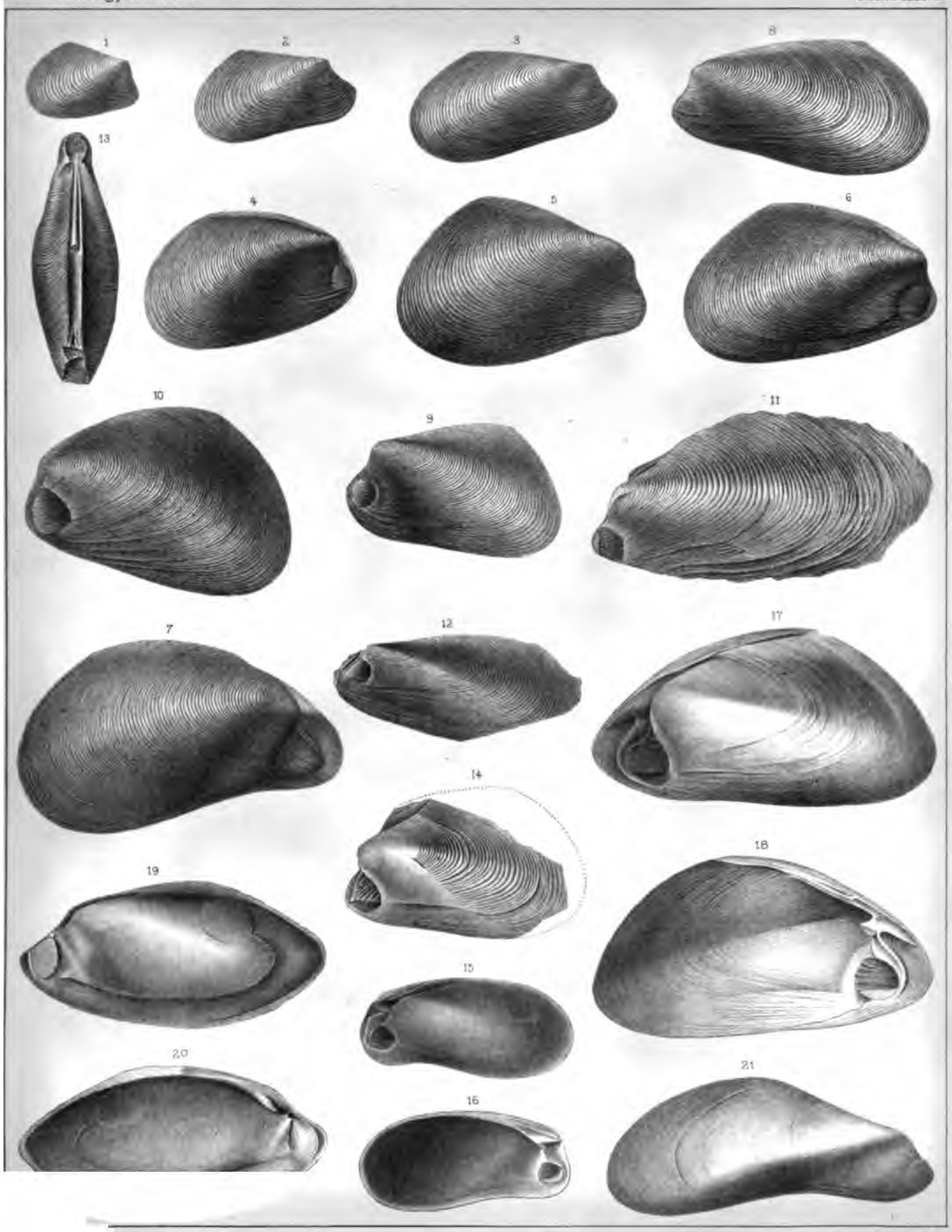
HAMILTON GROUP.

(MODIOMORPHIDÆ.)



Rectograph.

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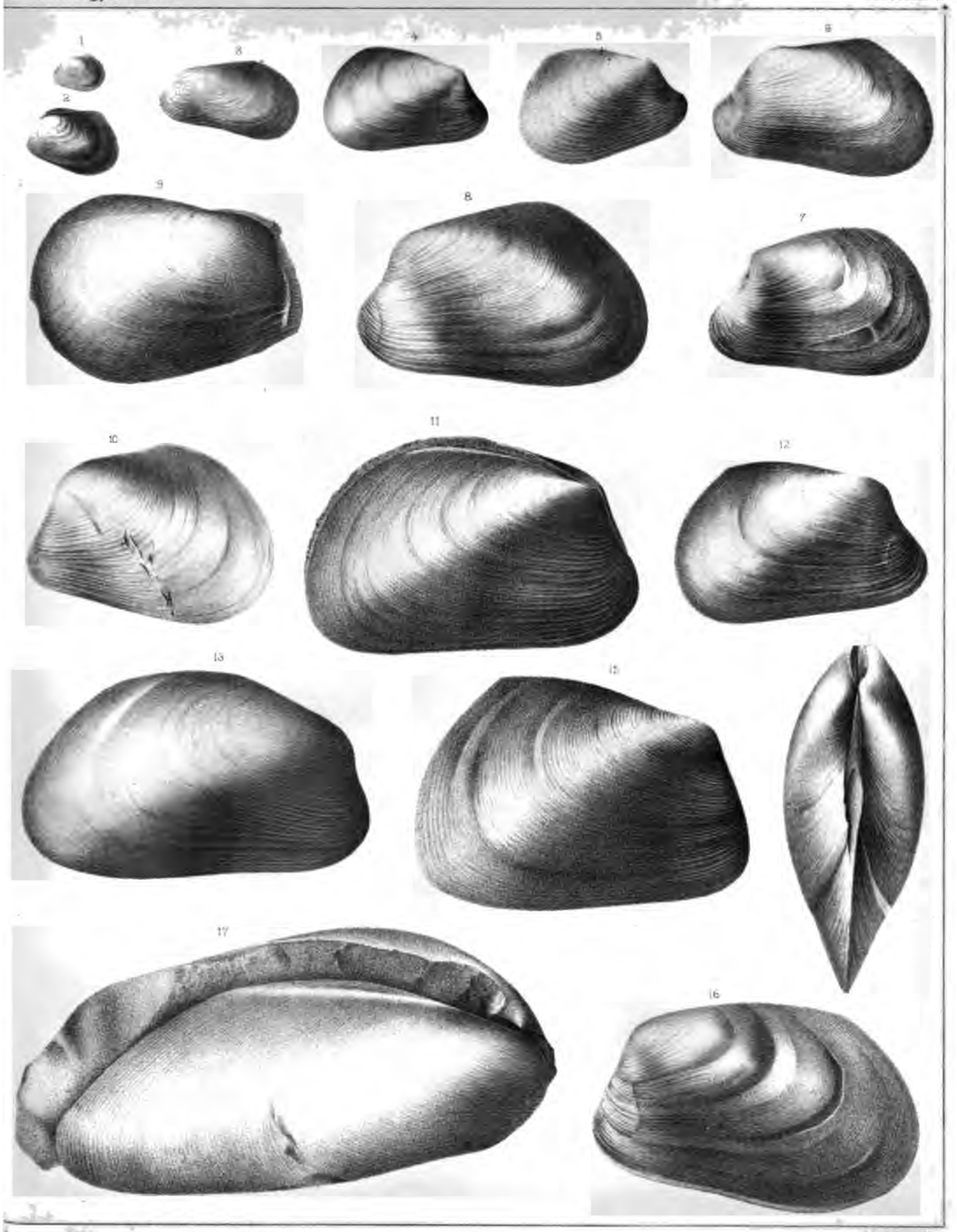
HAMILTON GROUP.

(MODIOMORPHIDÆ.)



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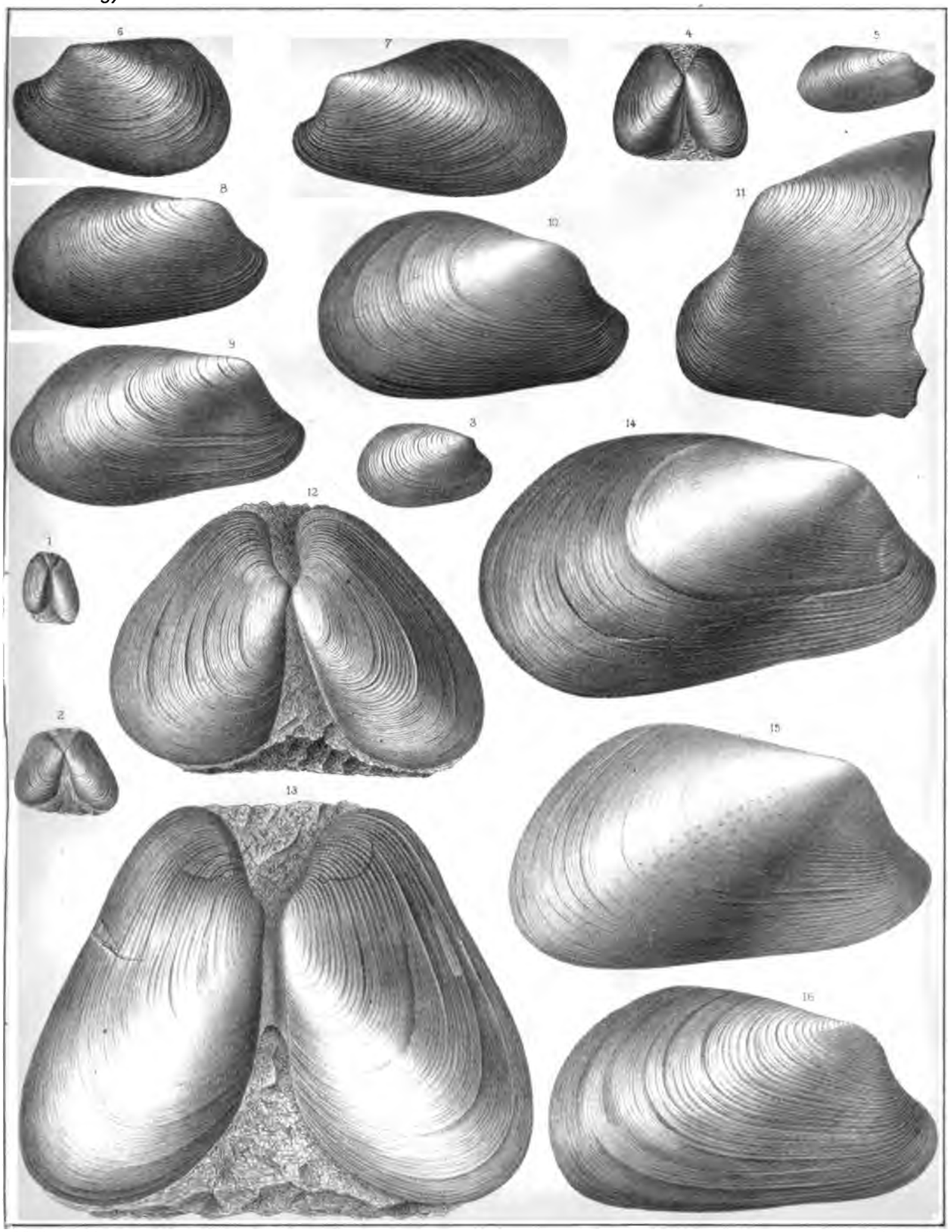
HAMILTON GROUP.

(MODIOMORPHIDÆ.)

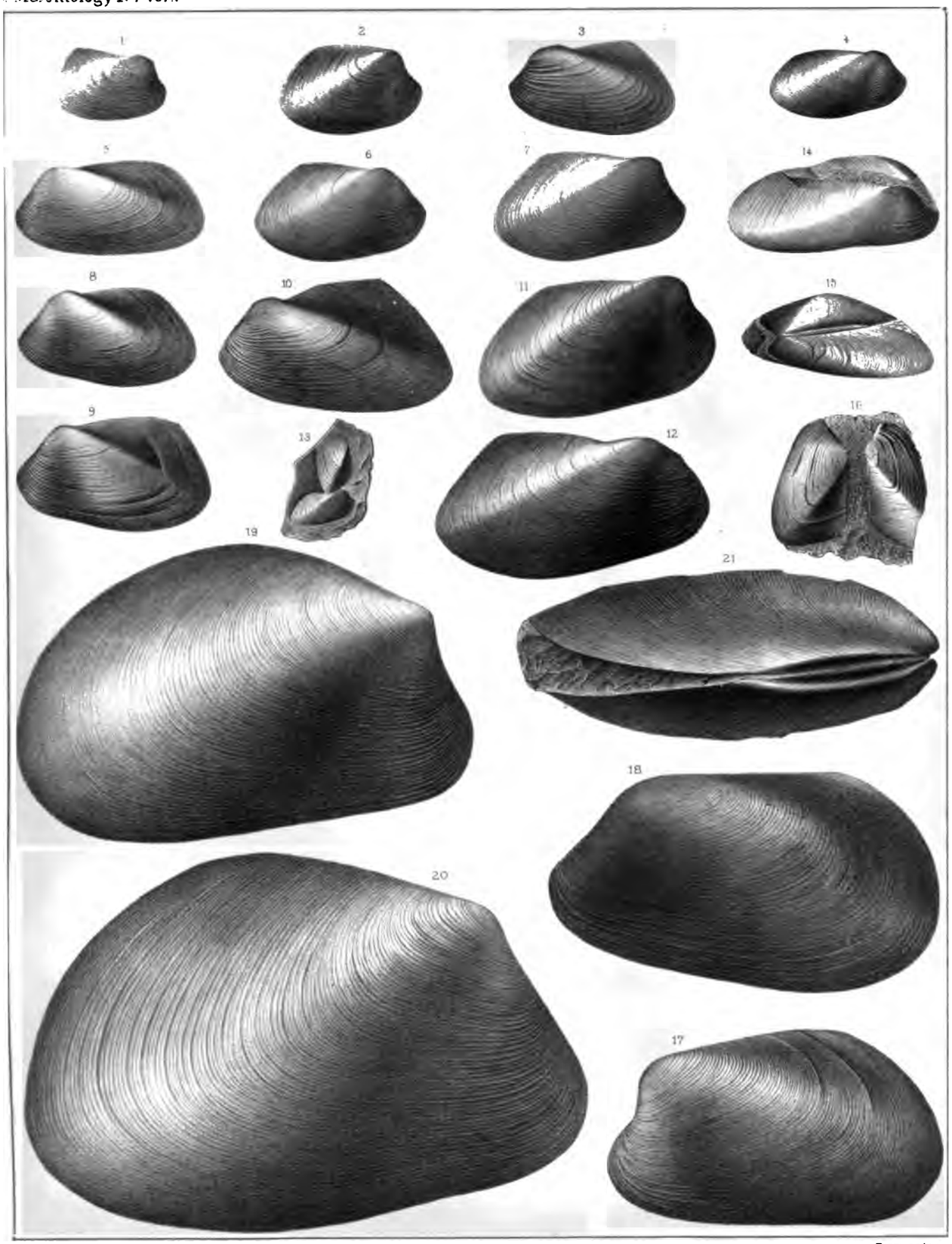
Palæontology N.Y. Vol V. Plate XXXVII.



G.B. Simpson del. Riemann lith.

HAMILTON GROUP.

(MODIOMORPHIDÆ.)



G.B. Simpson del.

Riemann lith.

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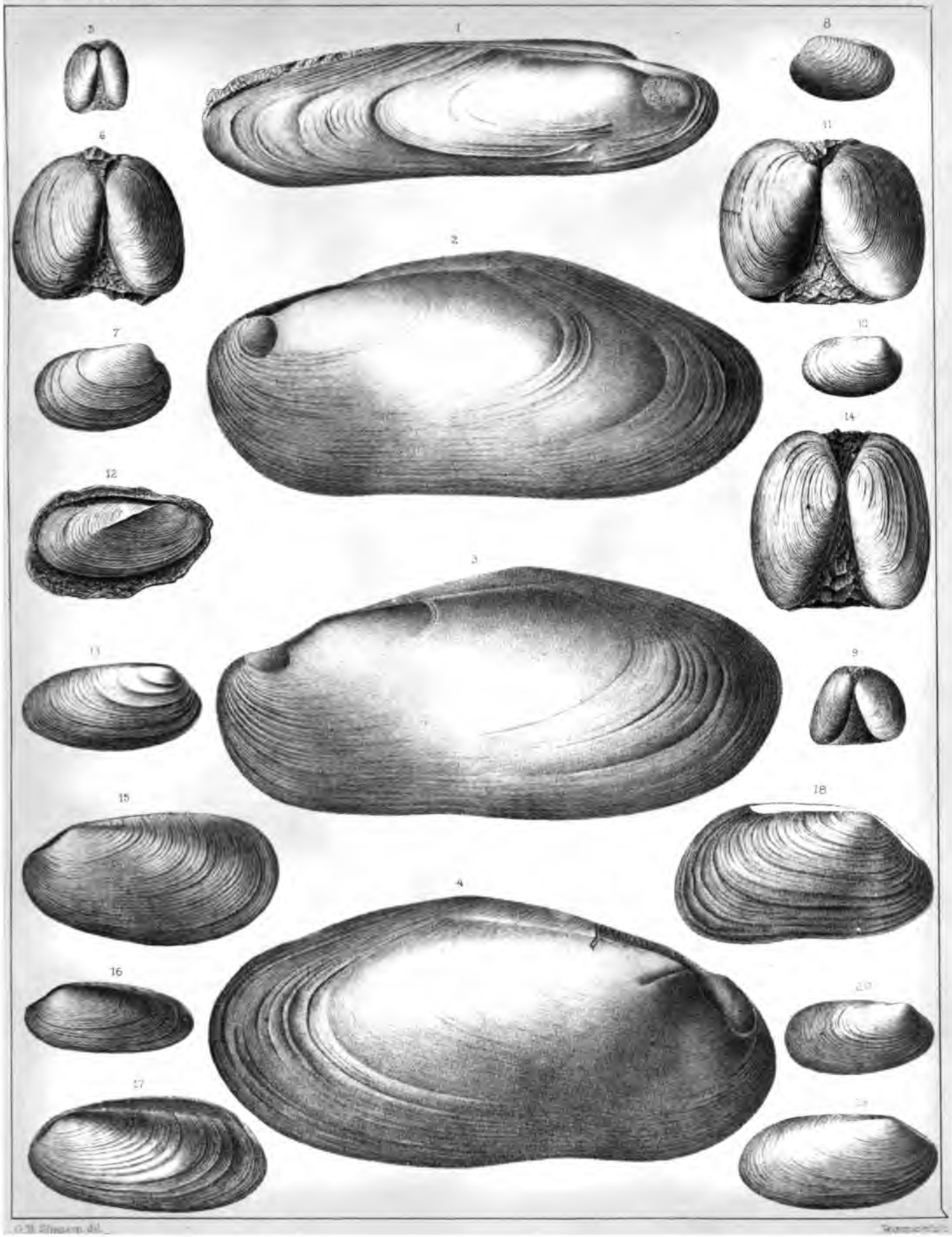
HAMILTON CHEMUNG & WAVERLY GROUPS.

(MODIOMORPHIDÆ.)

Palæontology N.Y. Vol V

Plate XL



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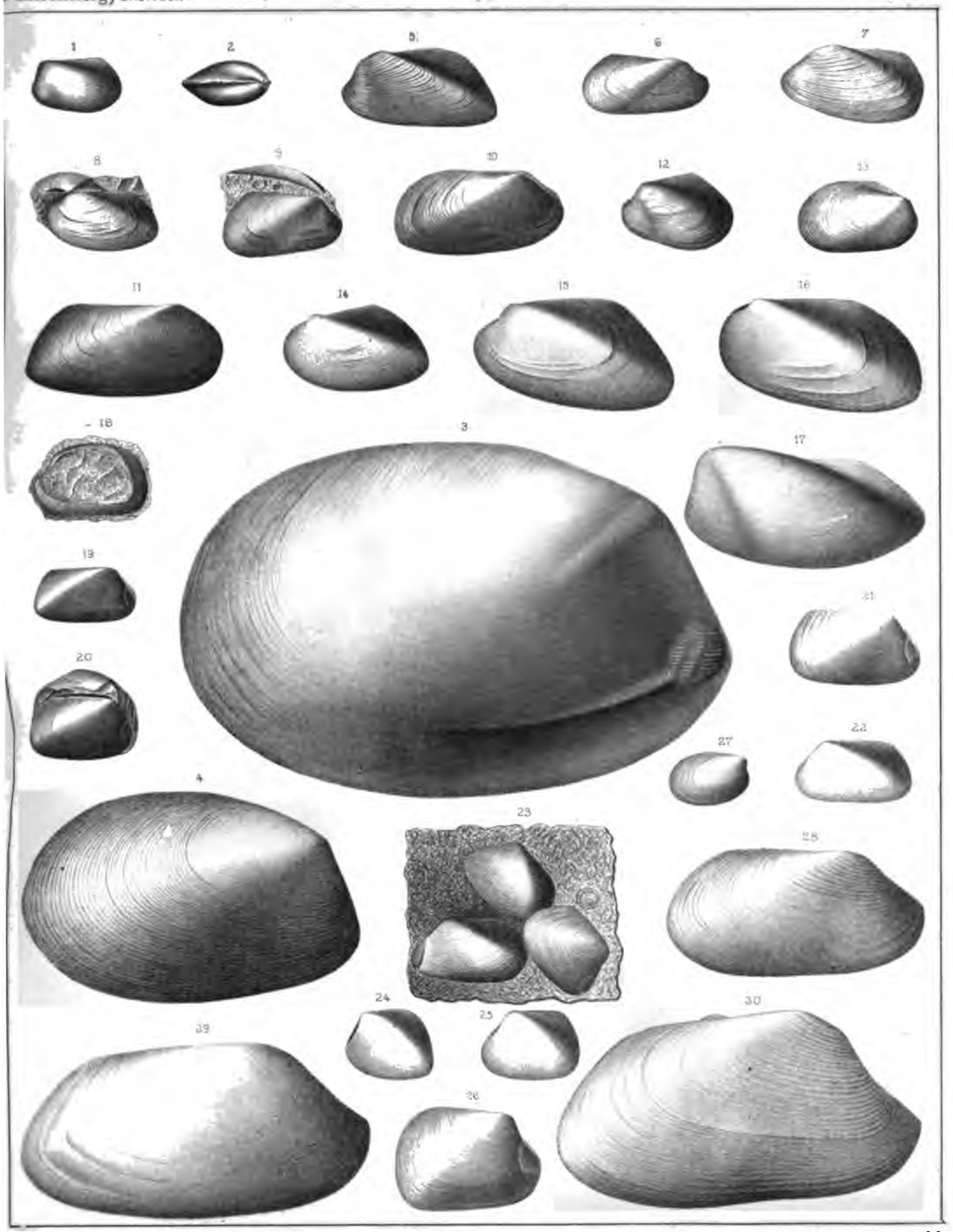
UPPER HELDERBERG TO WAVERLY GROUPS.

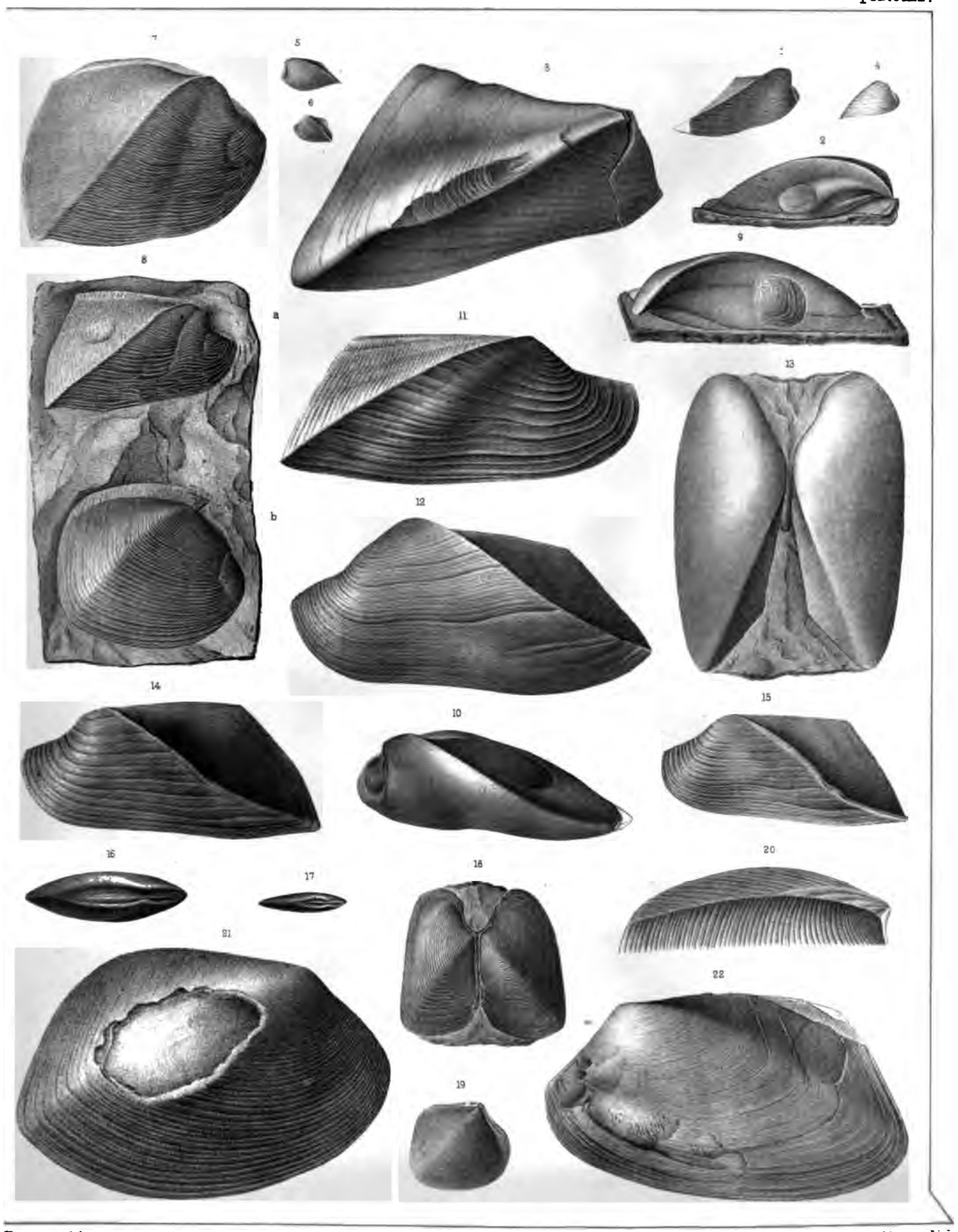
(MODIOMORPHIDÆ.)



G.B. Simpson del.

Riemann lith.

UPPER HELDERBERG TO CHEMUNG GROUP.



Emmons del. Pl. Lith.

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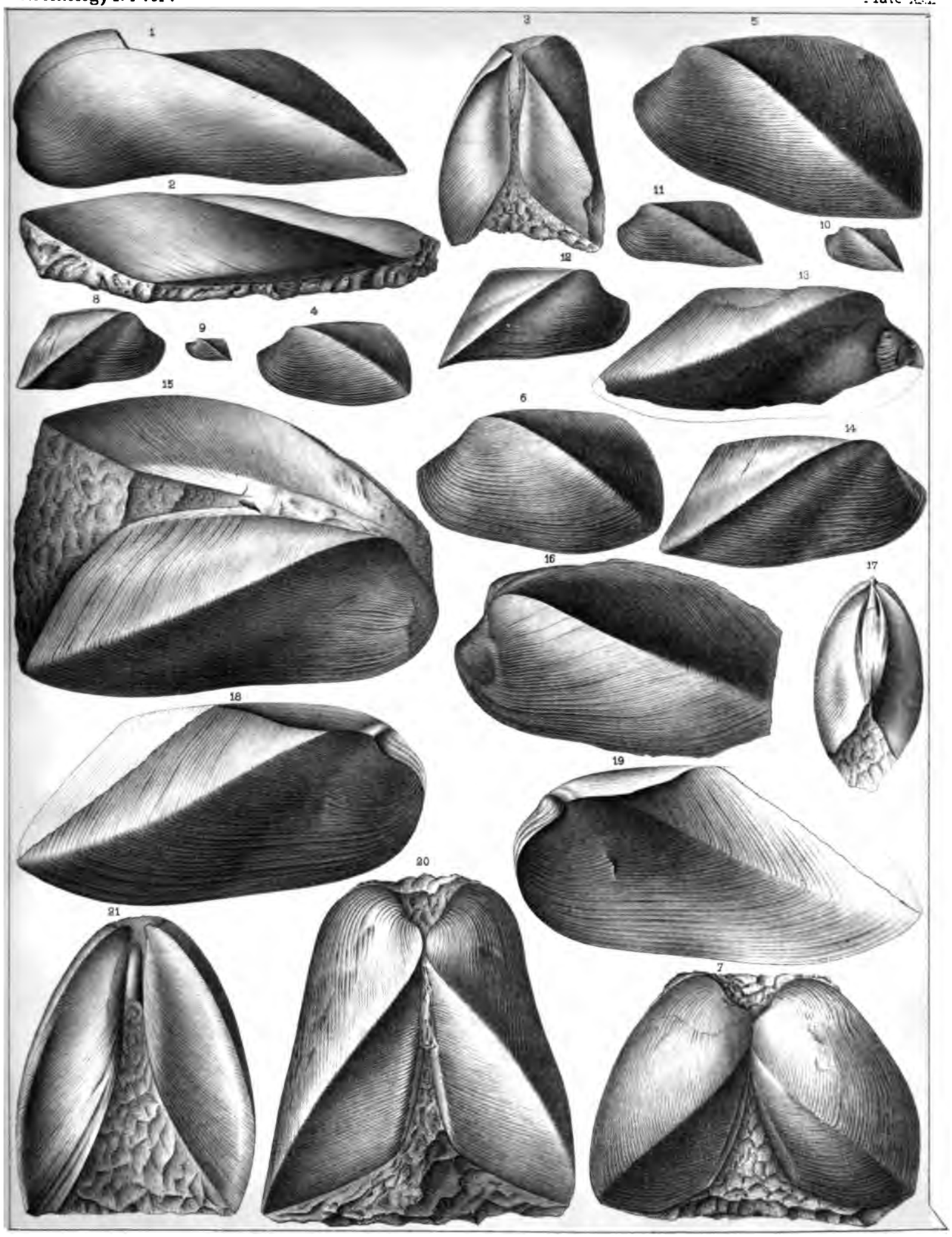
HAMILTON GROUP.

(MODIOMORPHIDÆ.)



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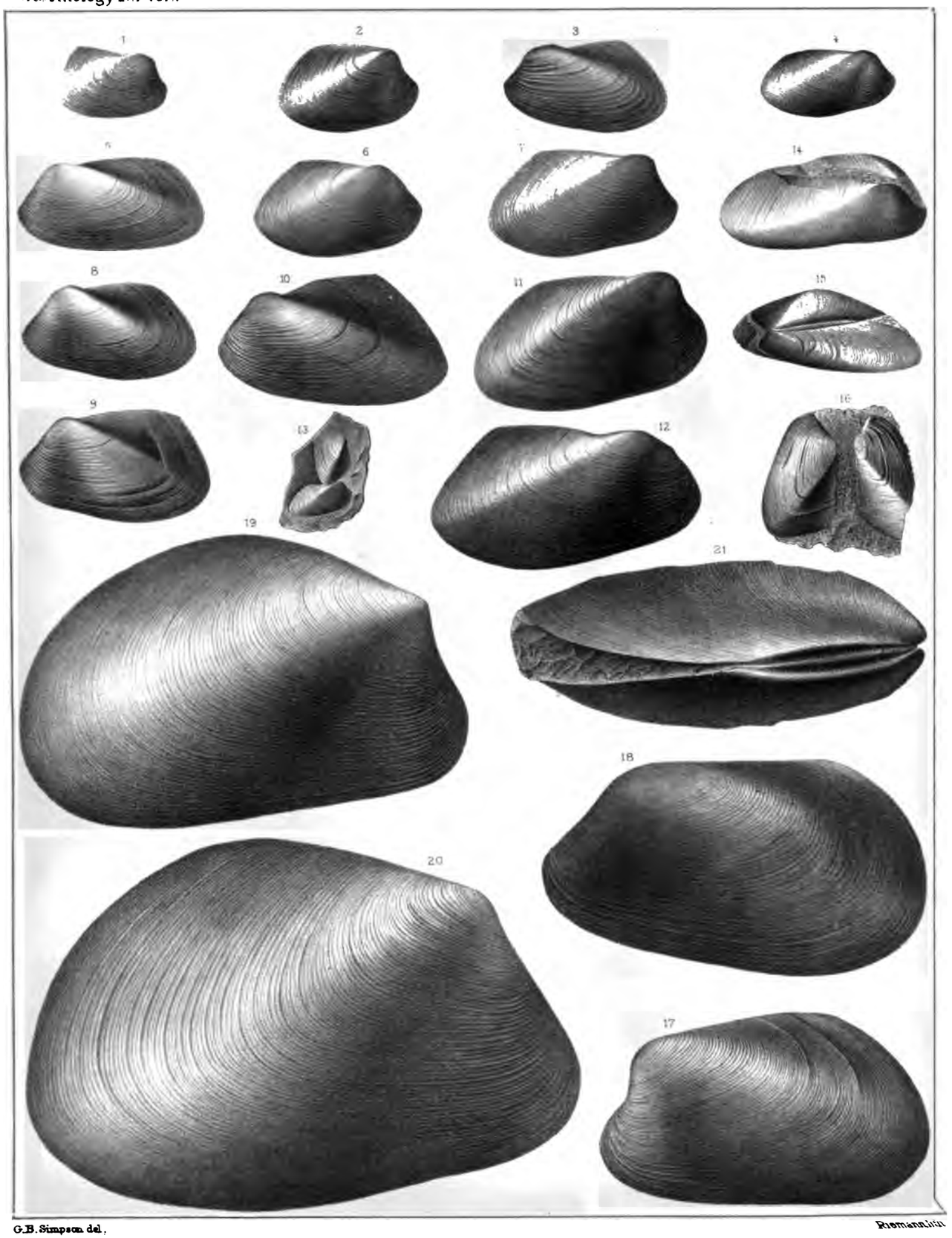
HAMILTON GROUP.

(MODIOMORPHIDÆ.)



G.B. Simpson del.

Riemann lith.

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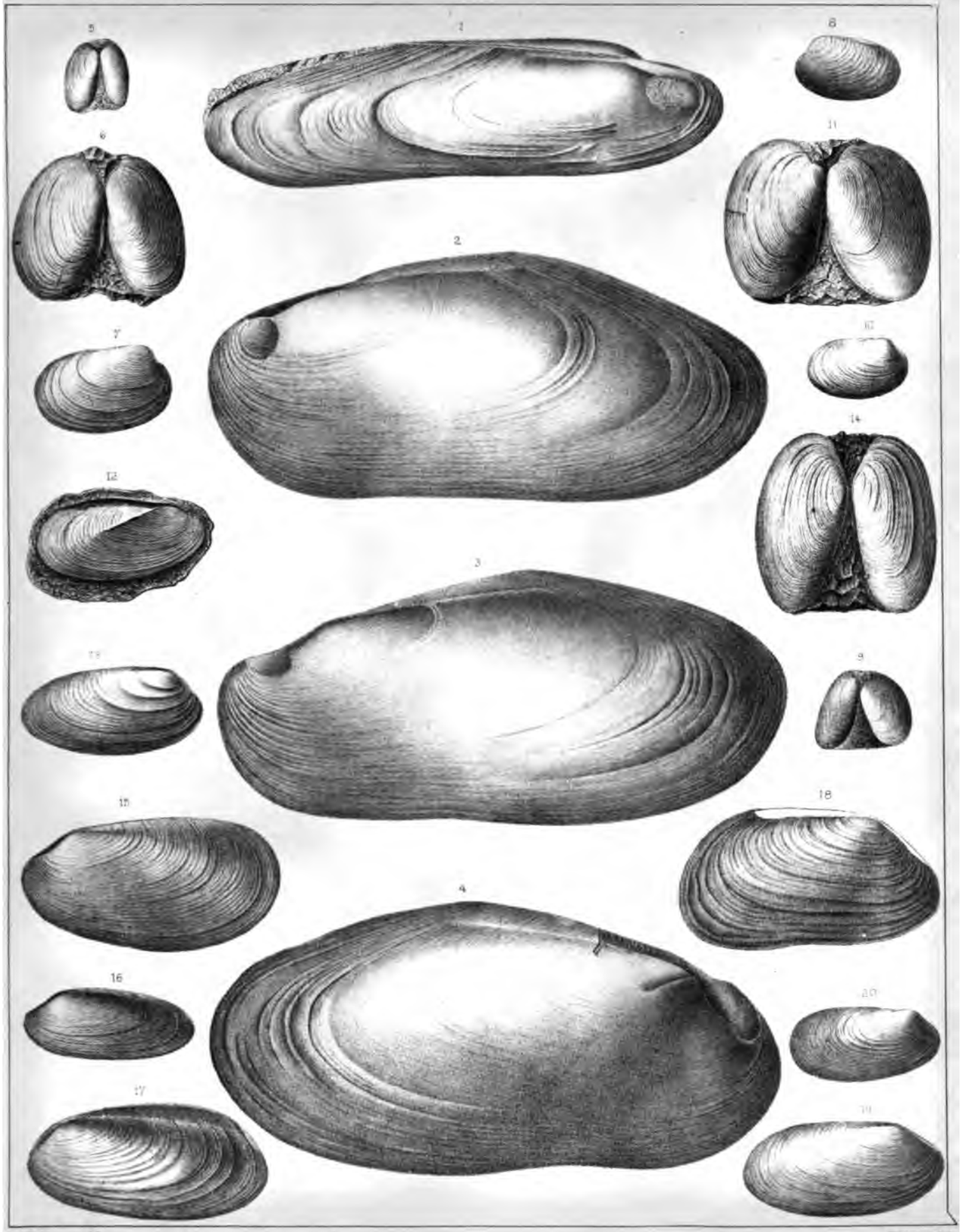
HAMILTON CHEMUNG & WAVERLY GROUPS.

(MODIOMORPHIDÆ.)

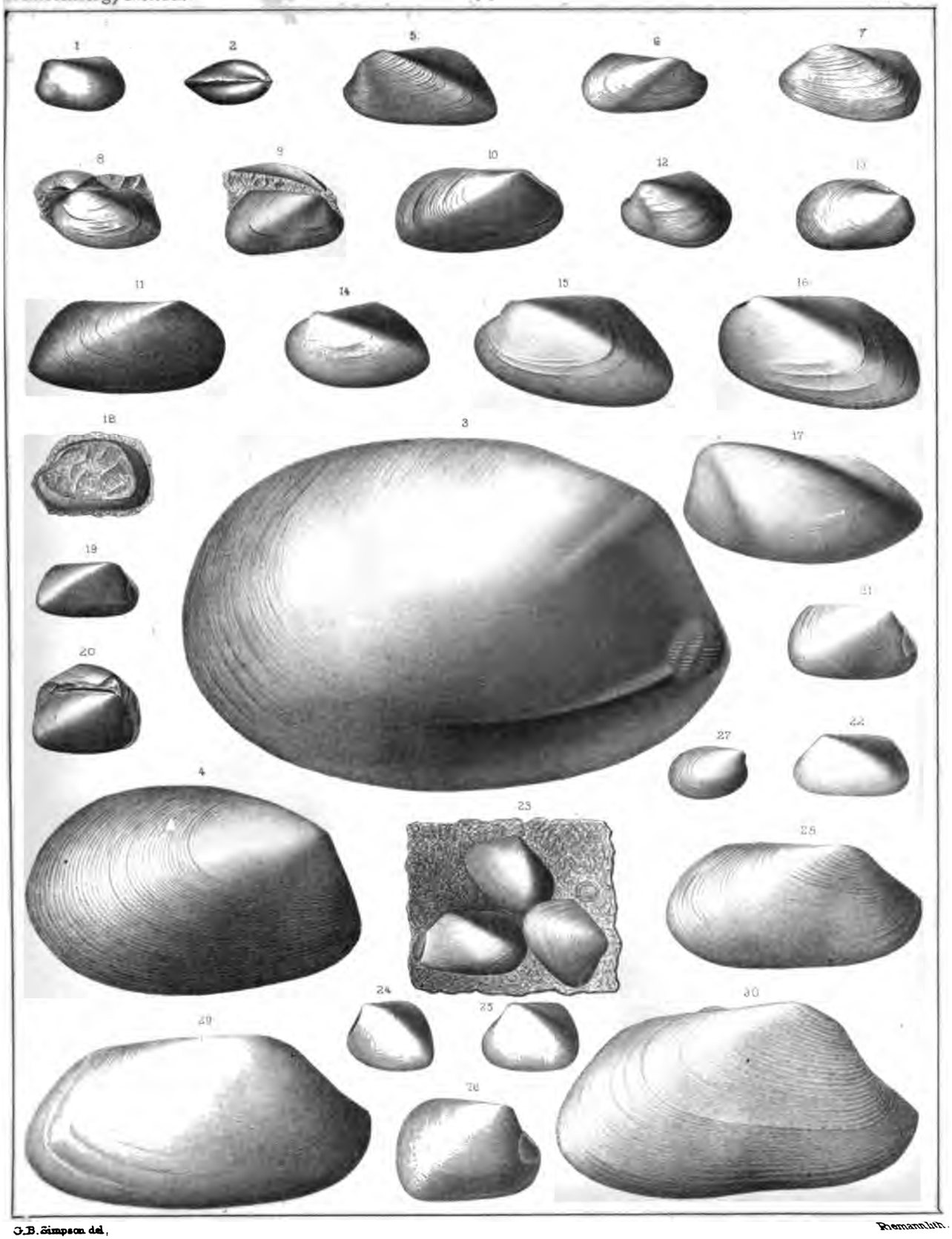
Palæontology NY Vol V

Plate XL



UPPER HELDERBERG TO WAVERLY GROUPS.

(MODIOMORPHIDÆ.)

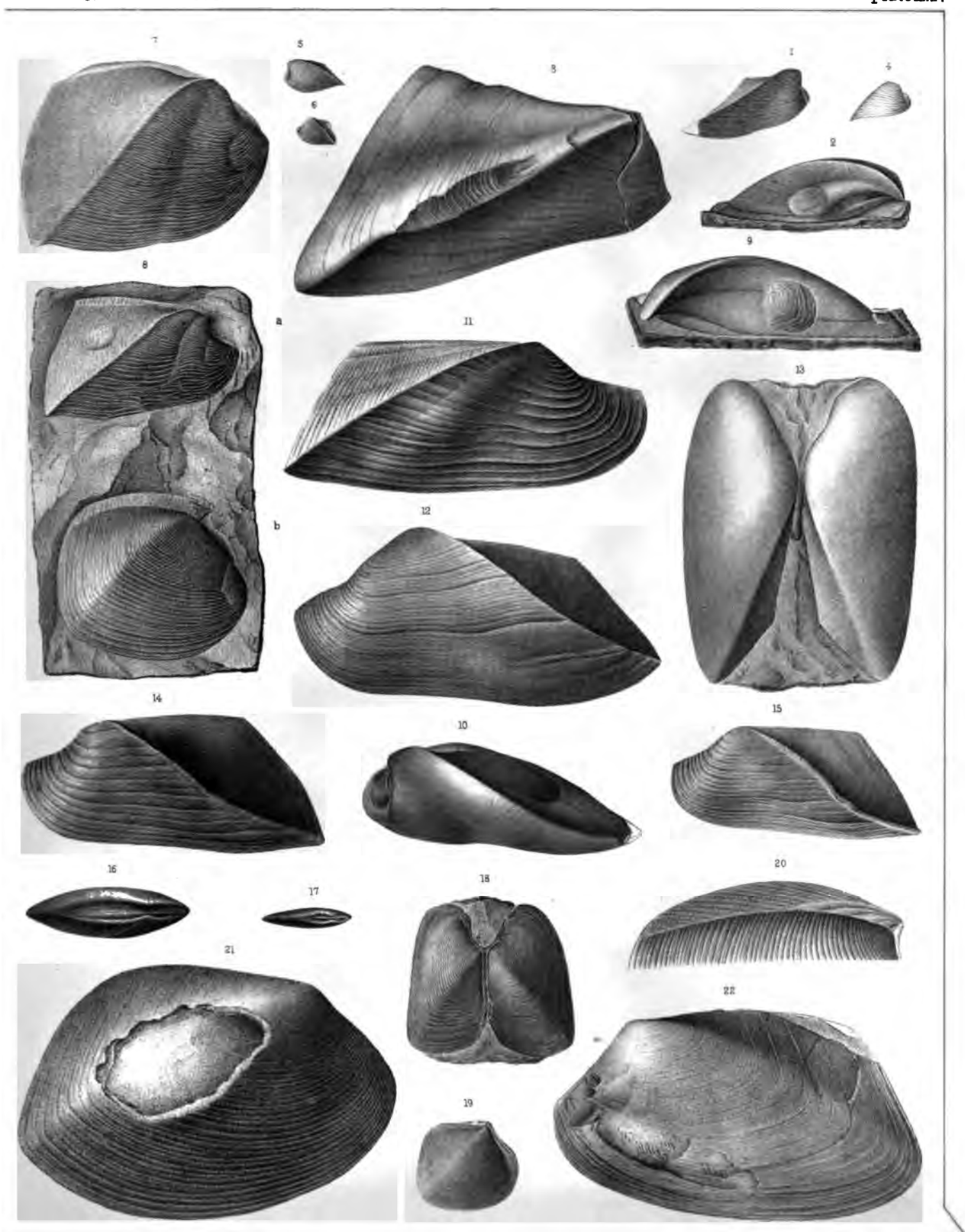


G.B. Simpson del.

Rhemann lith.

[redacted]

UPPER HELDERBERG TO CHEMUNG GROUP.



Emmons del. Pl. XLII.

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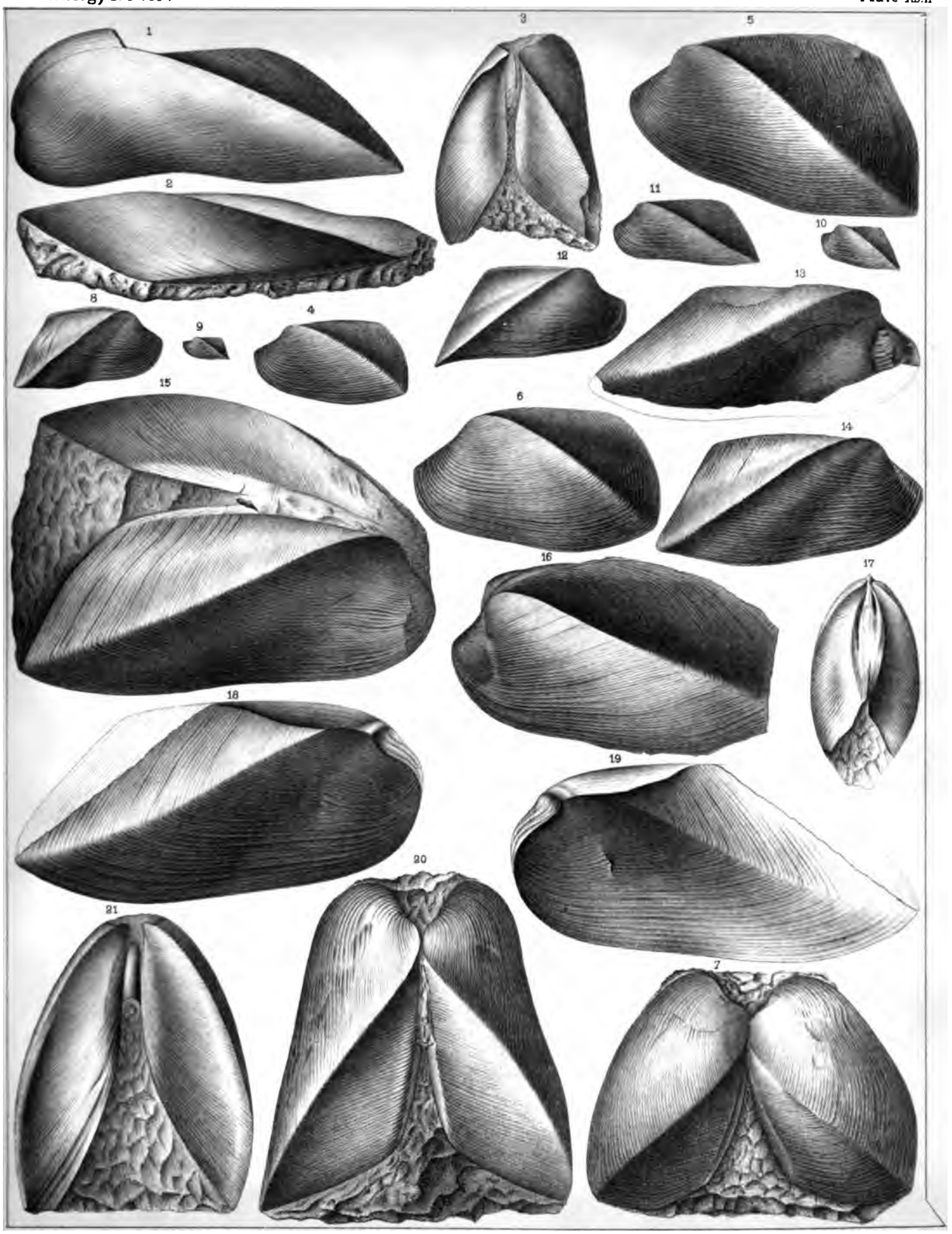
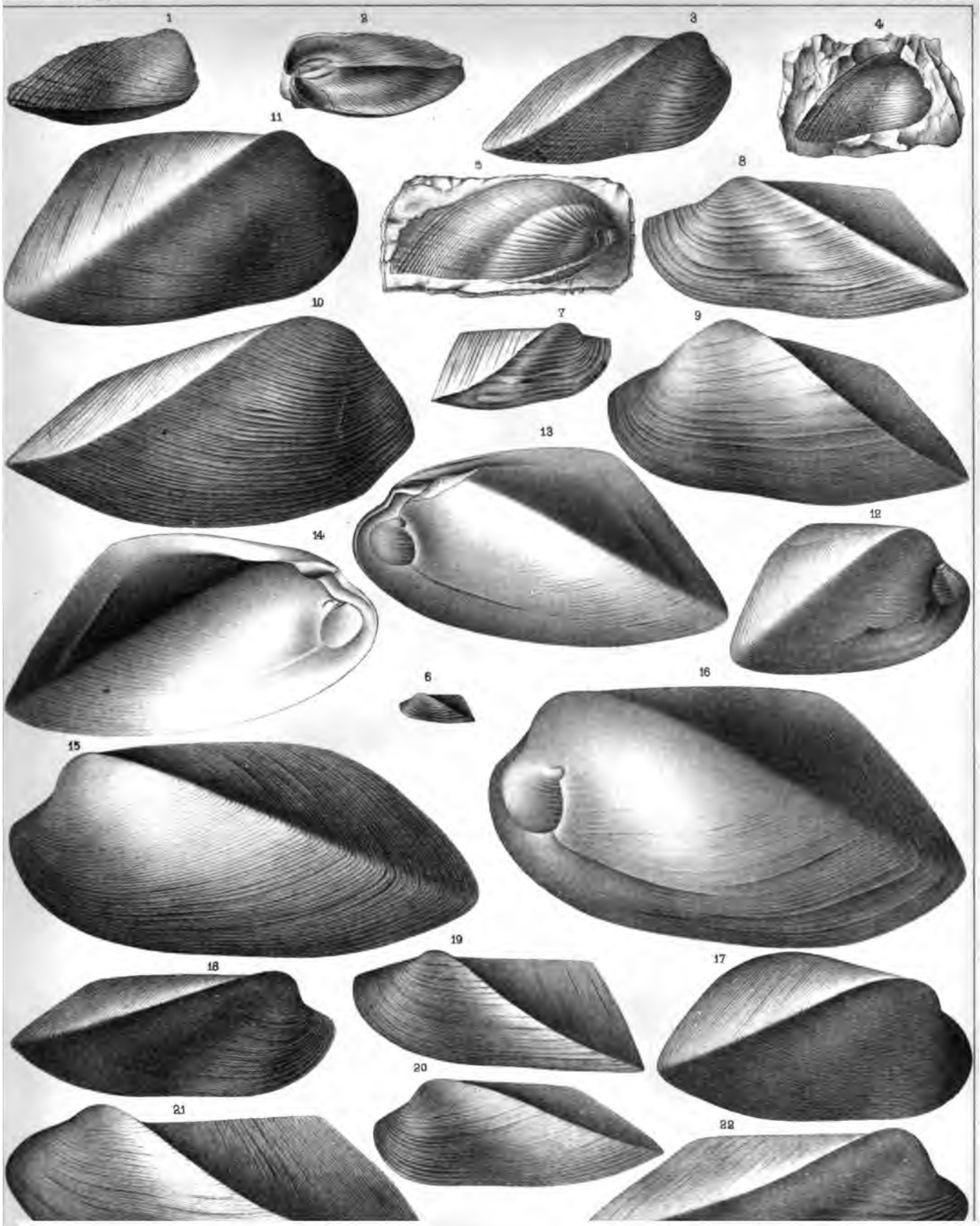
HAMILTON GROUP.

(MODIOMORPHIDÆ.)



HAMILTON & CHEMUNG GROUPS.

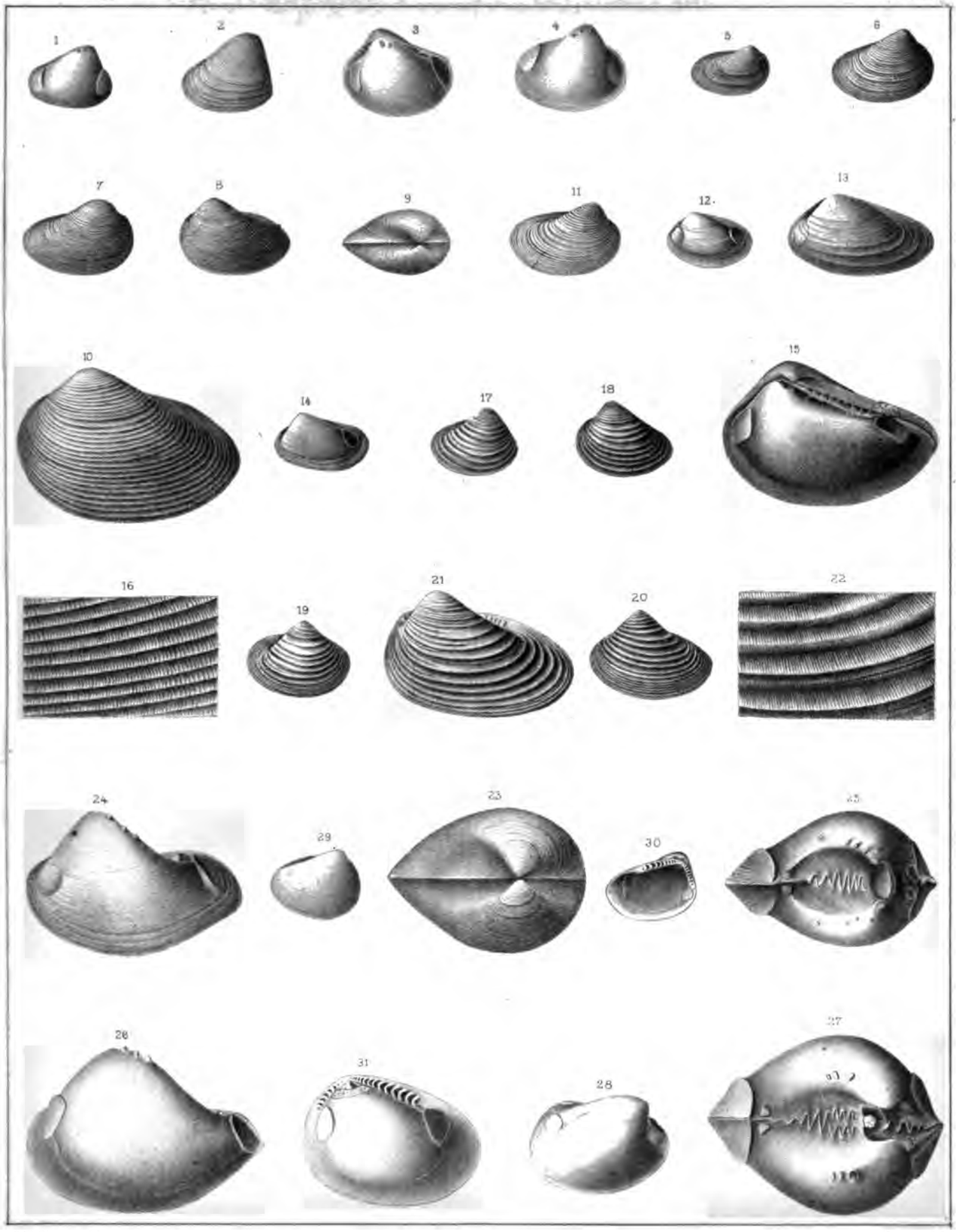
(MODIOMORPHIDÆ.)



HAMILTON & CHEMUNG GROUPS.

Upper Helderberg & Waverly Groups.

(NUCULIDÆ.)

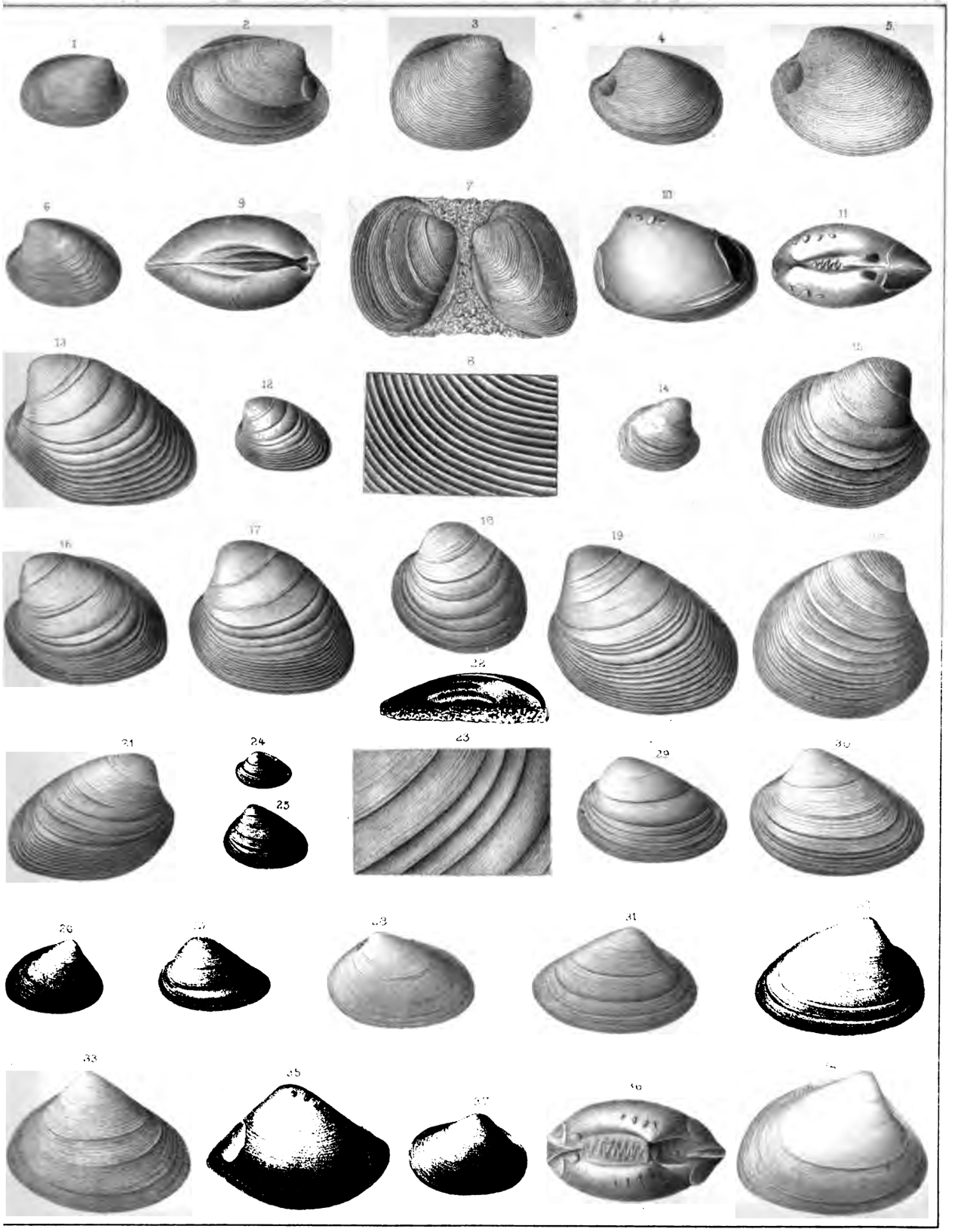


G.B. Simpson del.

Prentenlith.

HAMILTON GROUP.

(NUCULIDÆ.)



J.B. Simpson del.

Richmond lith.

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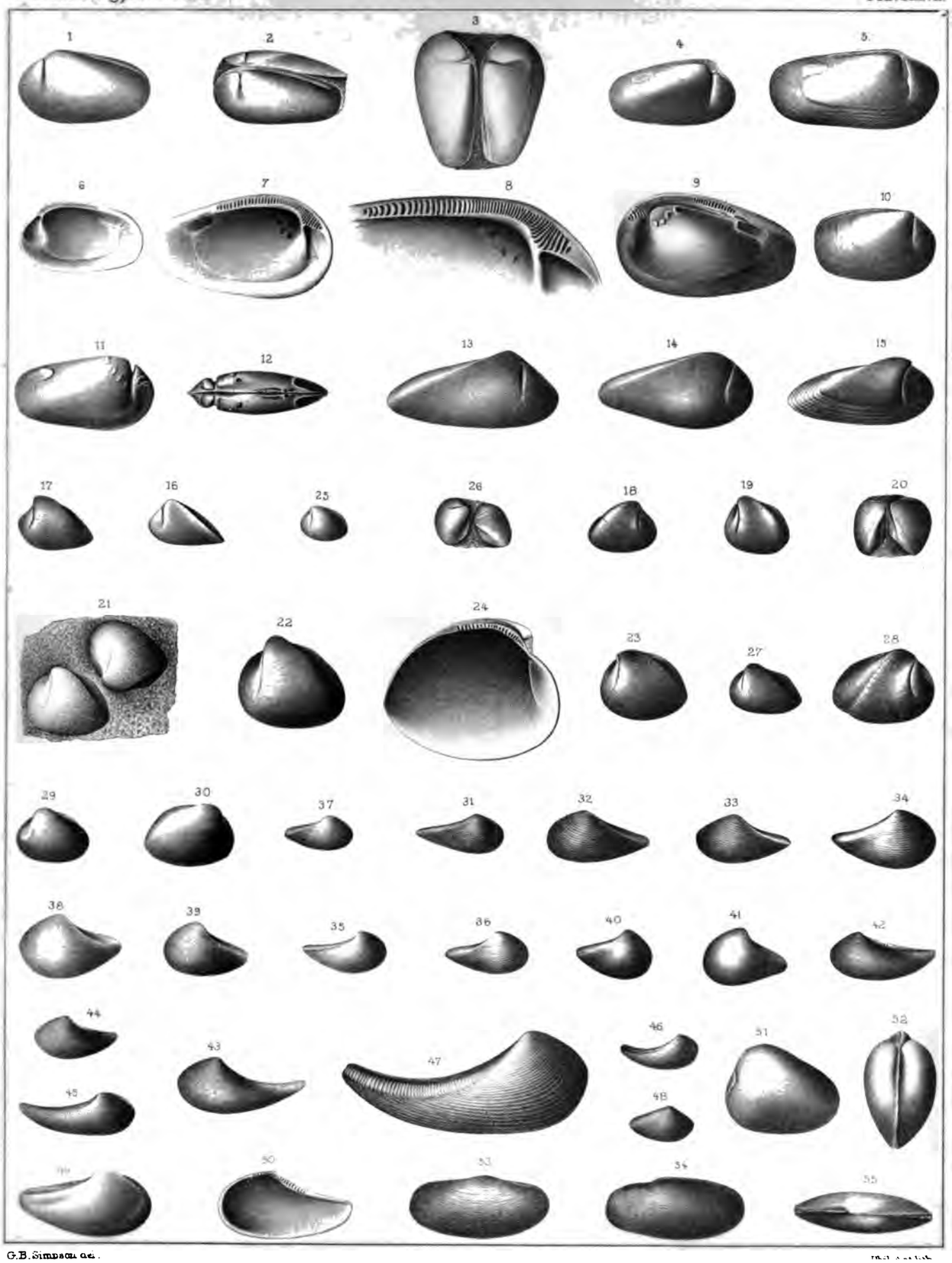
HAMILTON & CHEMUNG GROUPS.

Upper Helderberg & Waverly Groups.

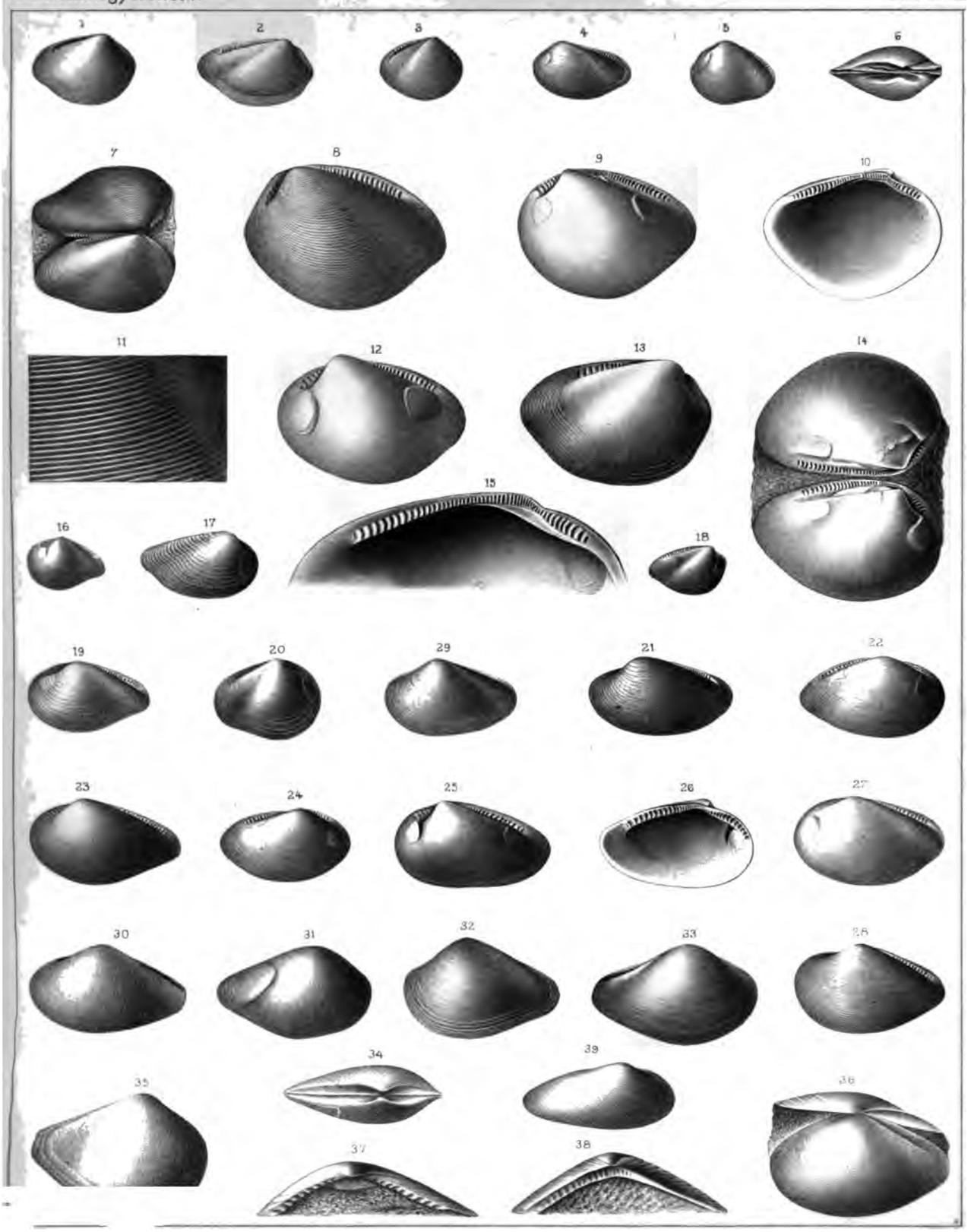
(NUCULIDÆ.)



G.B. Simpson del.

HAMILTON & CHEMUNG GROUPS.

(NUCULIDÆ.)

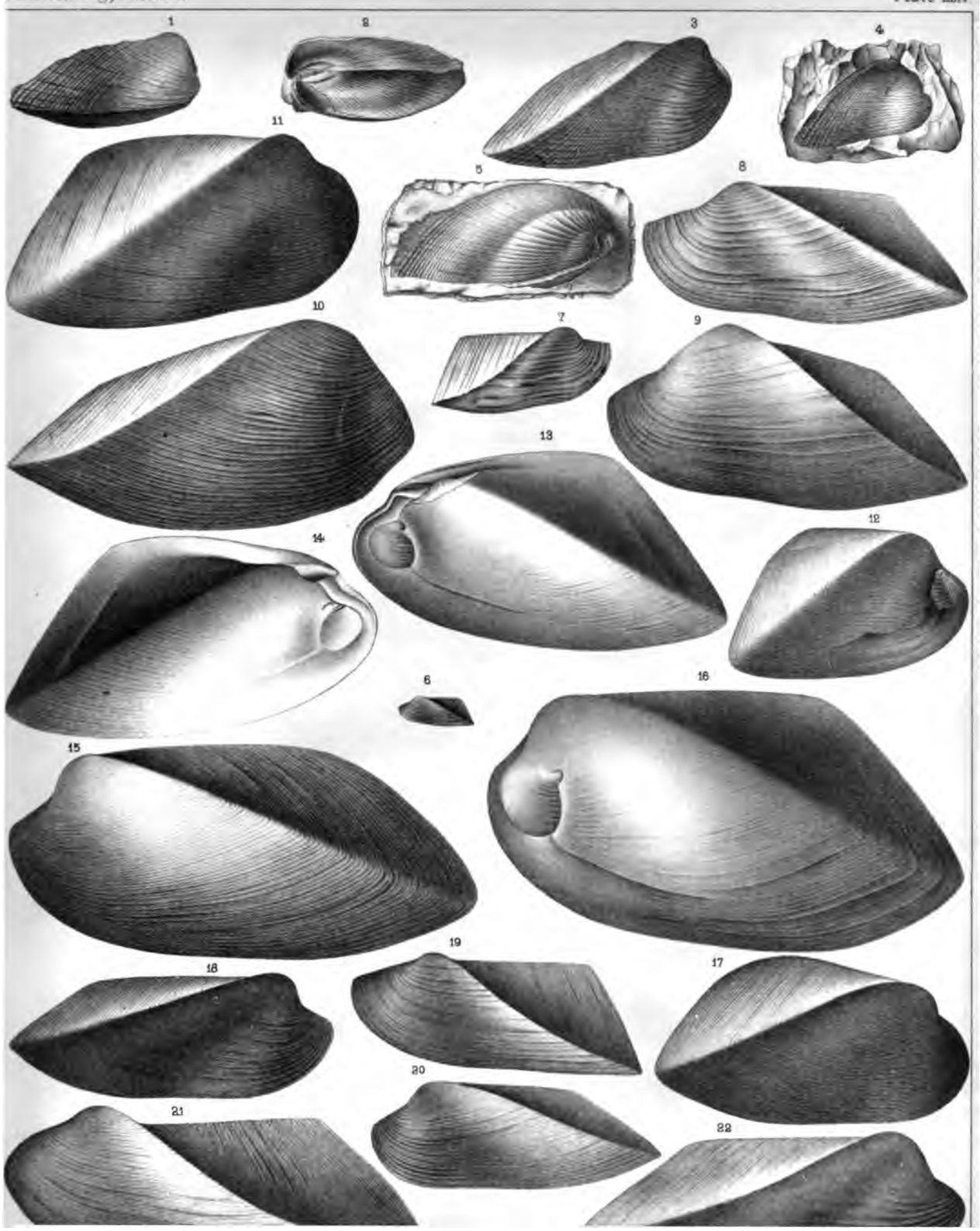


Simpson del. Phil. Ast. lith.

[redacted]

HAMILTON & CHEMUNG GROUPS.

(MODIOMORPHIDÆ.)

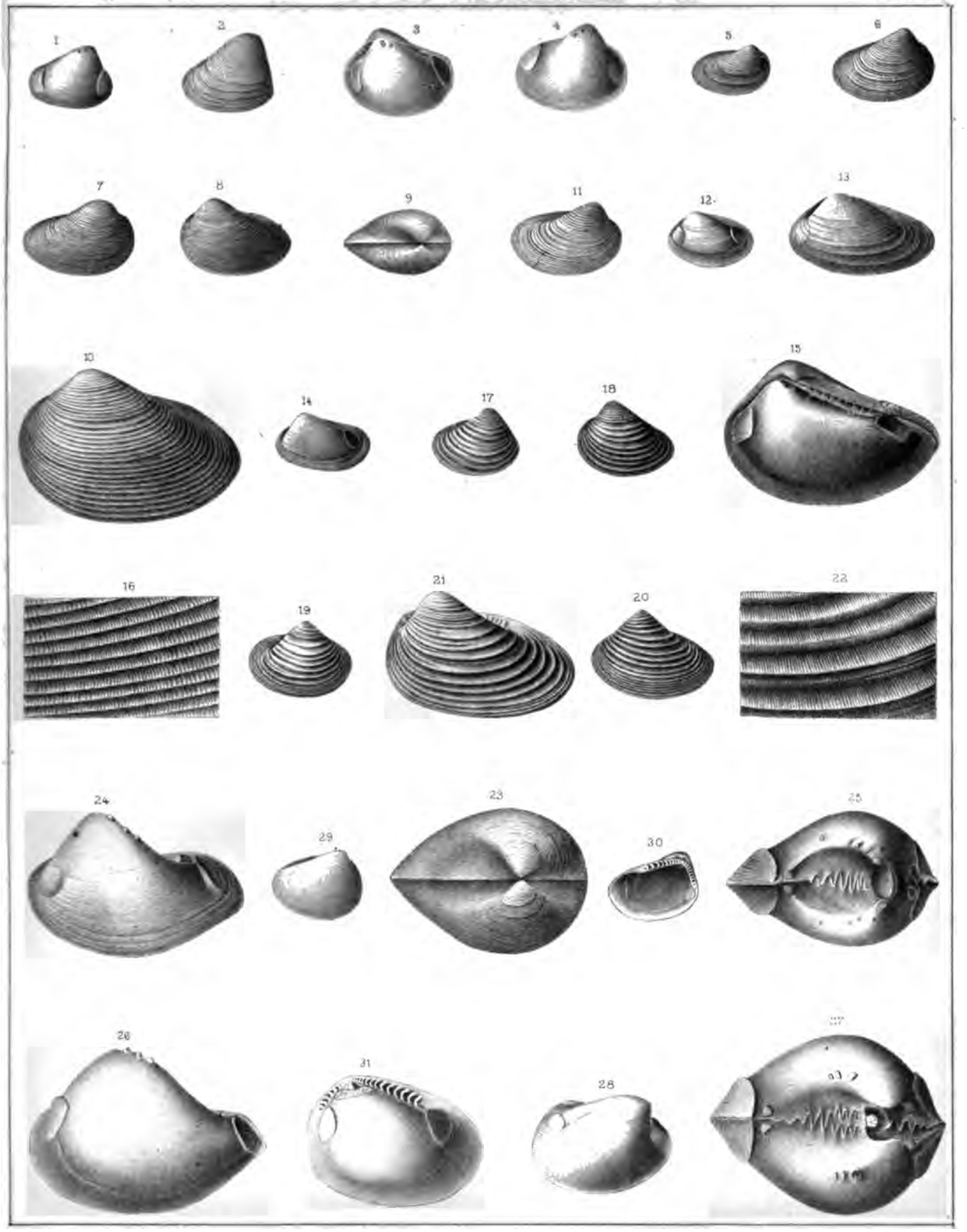


C psau del. Phil. Lith.

HAMILTON & CHEMUNG GROUPS.

Upper Helderberg & Waverly Groups.

(NUCULIDÆ.)

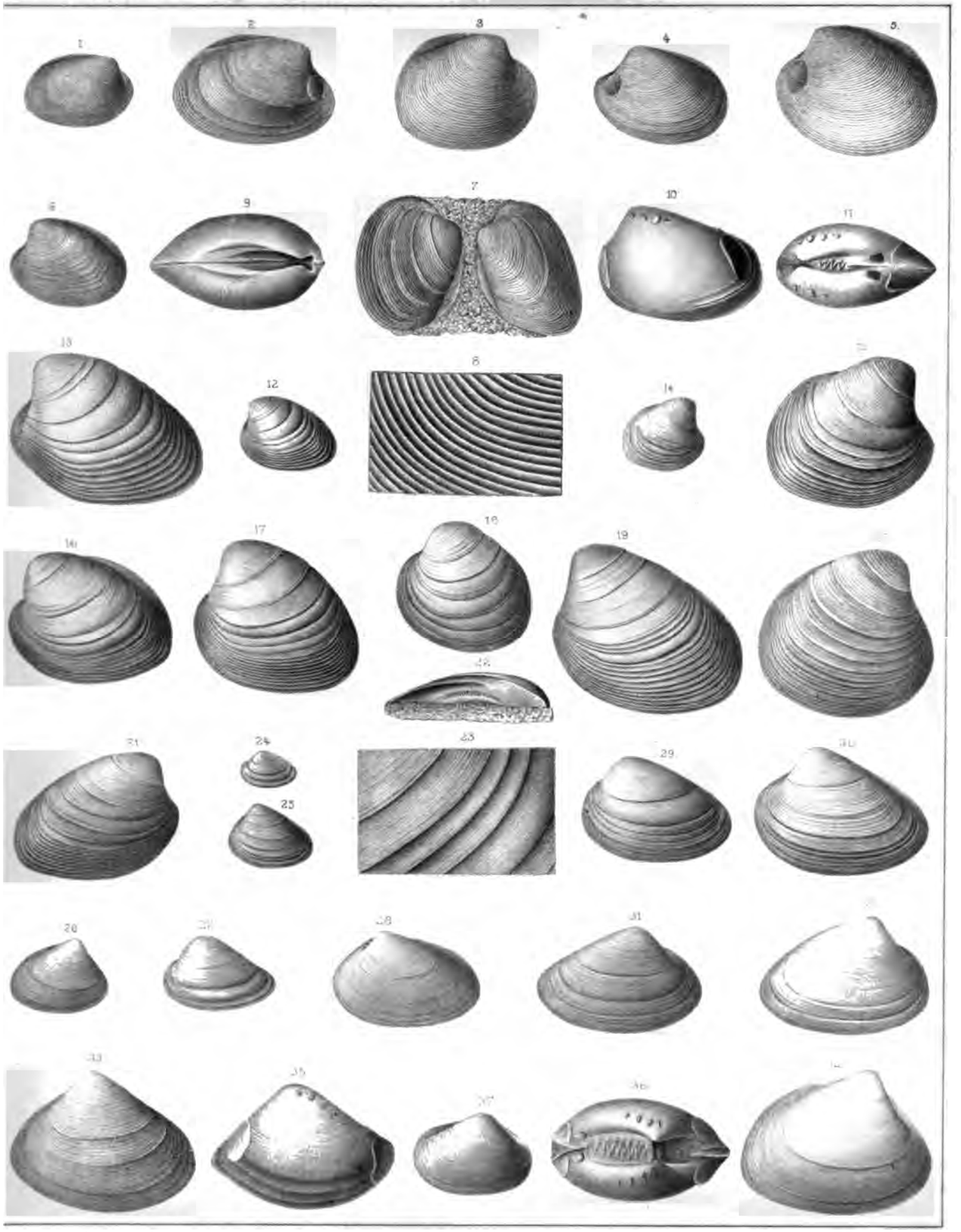


G.B. Simpson del.

Riemann lith.

HAMILTON GROUP.

(NUCULIDÆ.)

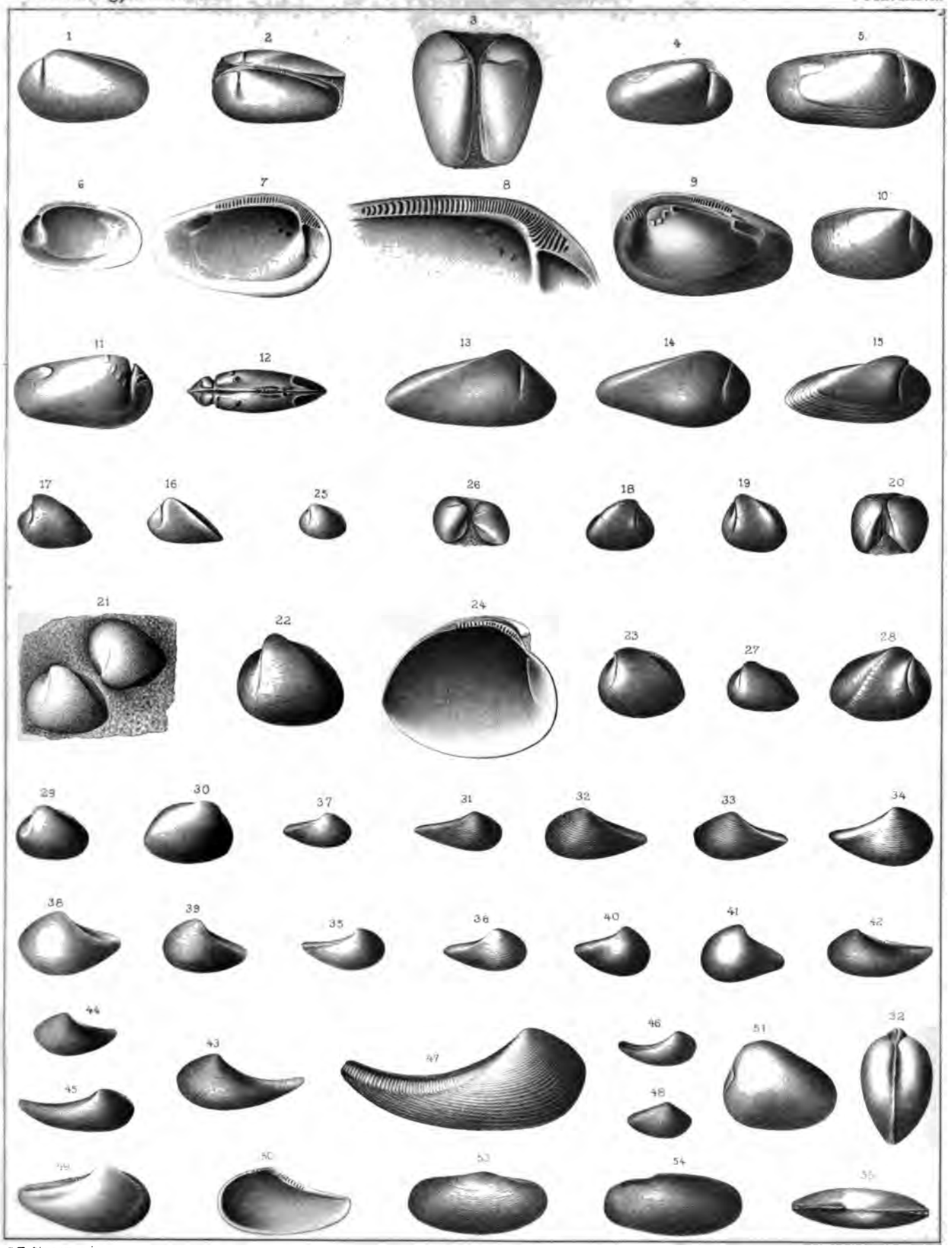


J. B. Simpson del.

HAMILTON & CHEMUNG GROUPS.

Upper Helderberg & Waverly Groups

(NUCULIDÆ.)

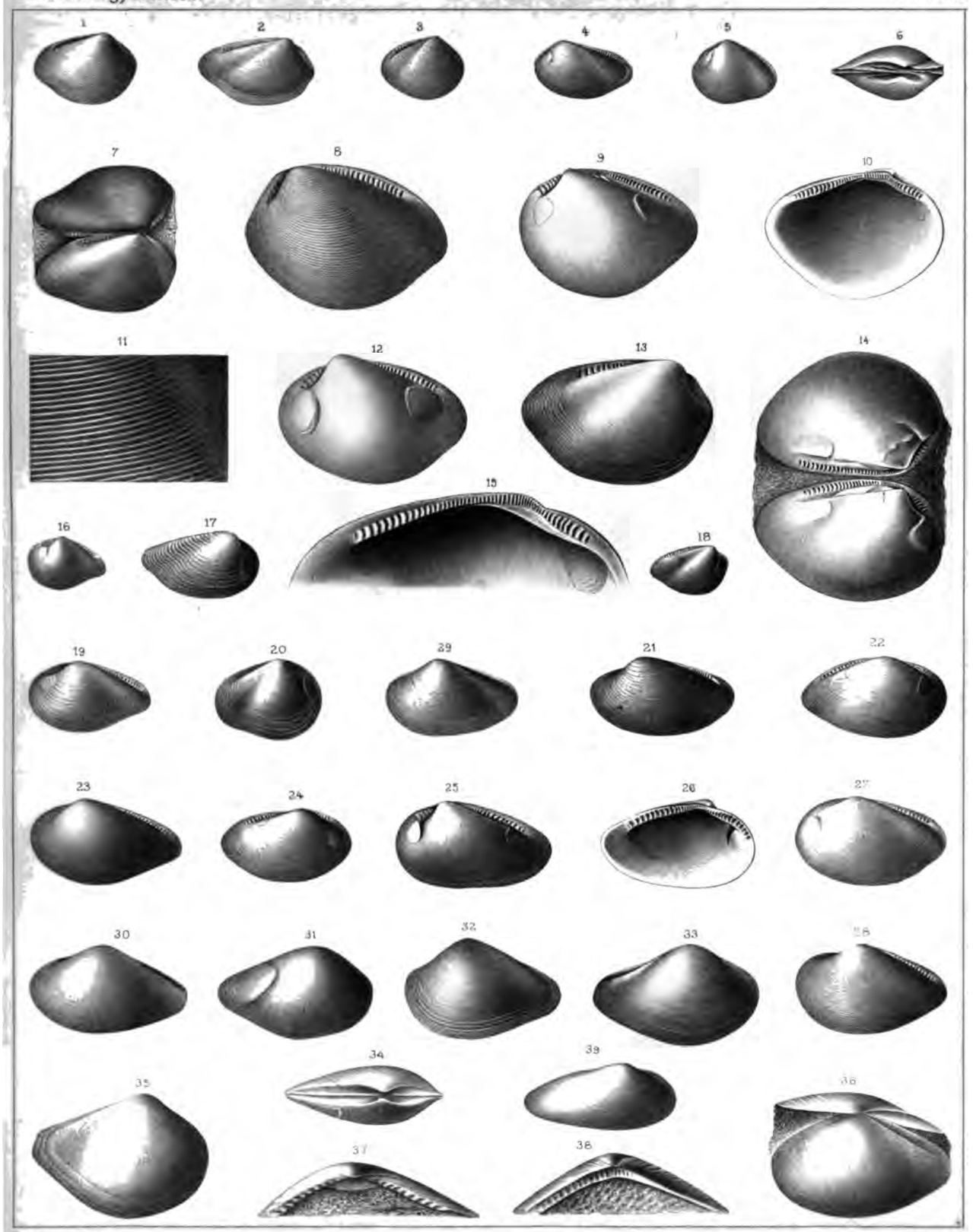


G.B. Simpson del.

[redacted]

HAMILTON & CHEMUNG GROUPS.

(NUCULIDÆ.)



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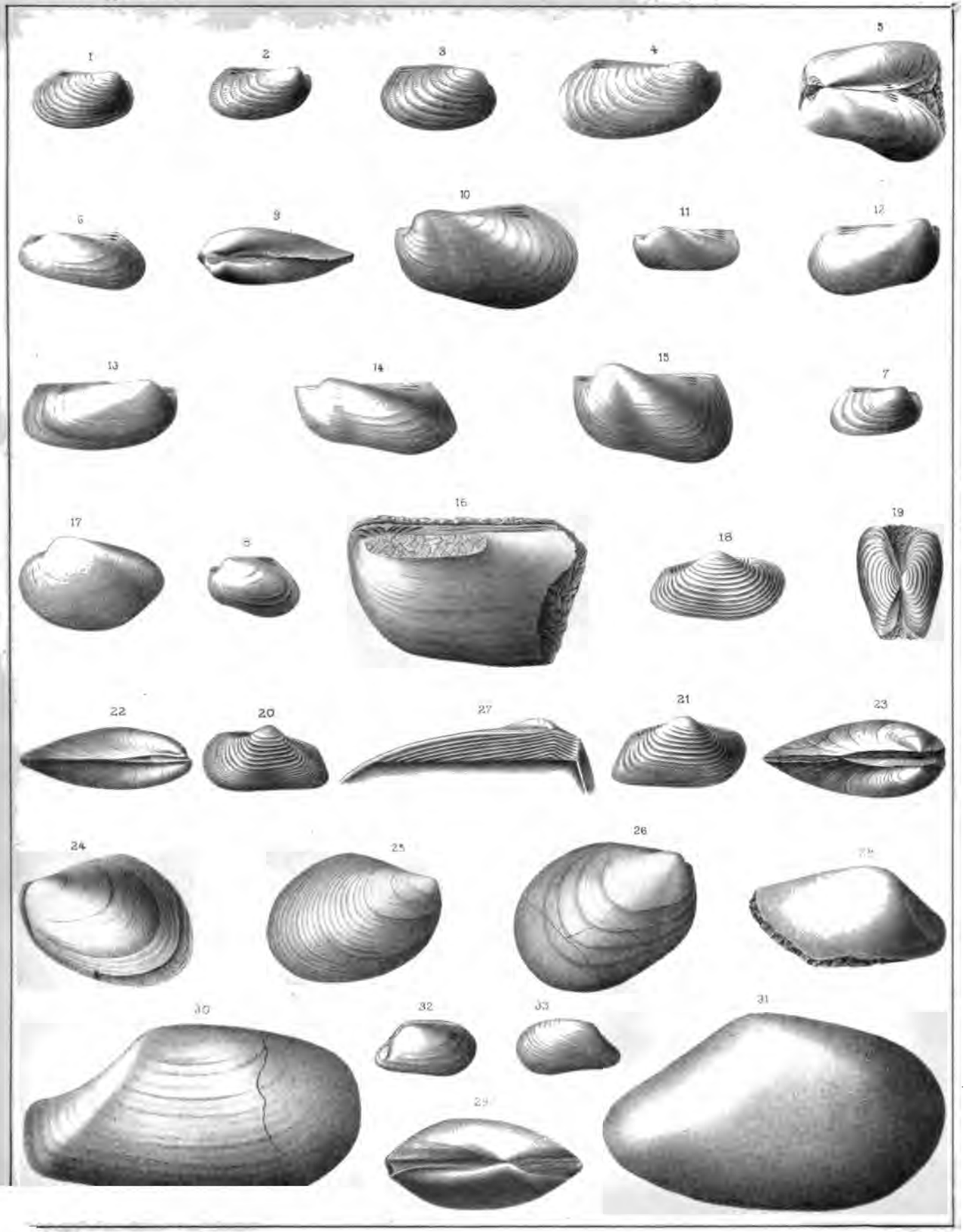
UPPER HELDERBERG TO WAVERLY GROUP.

(ARCIDÆ.)

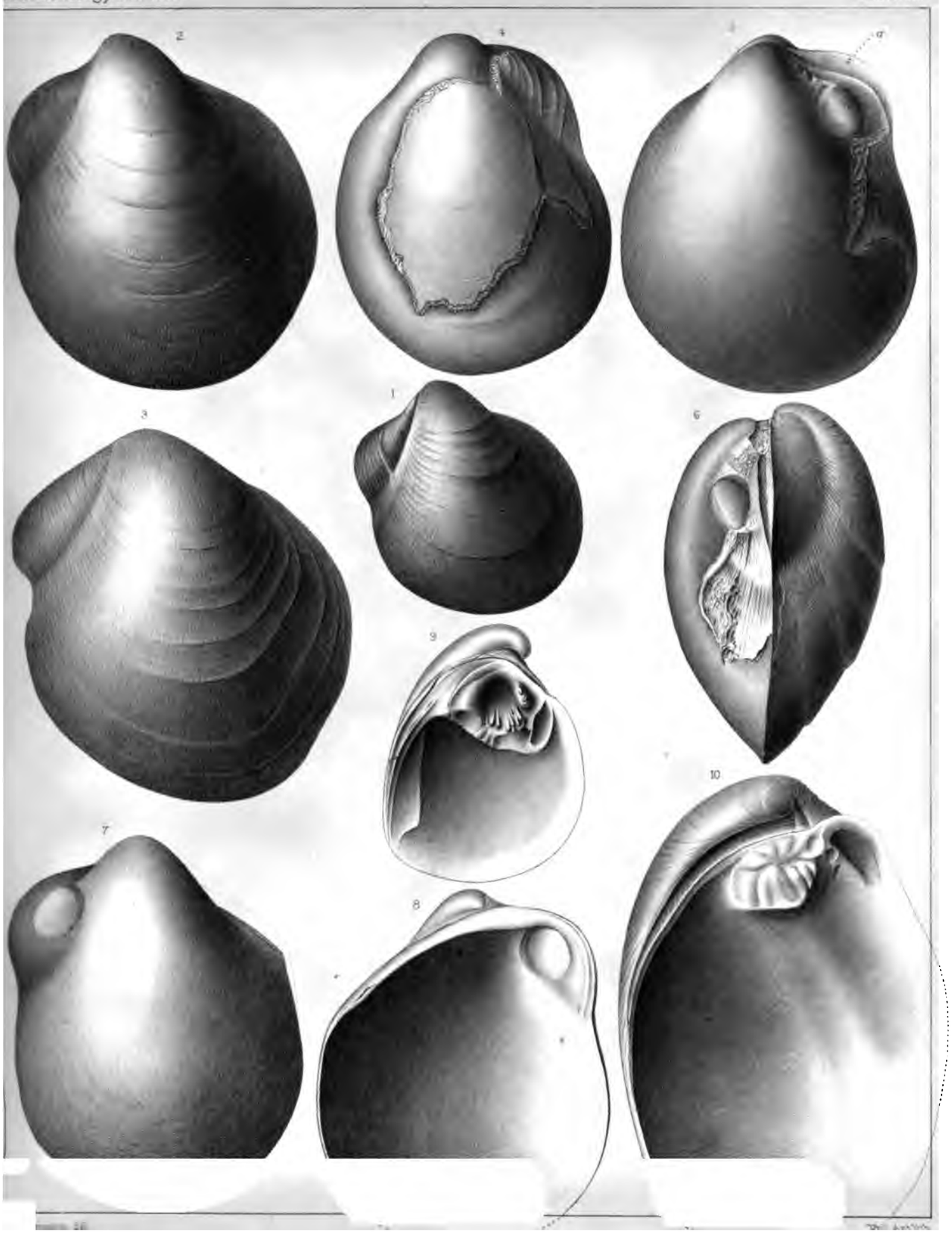


Hall del.

Hermann lith.

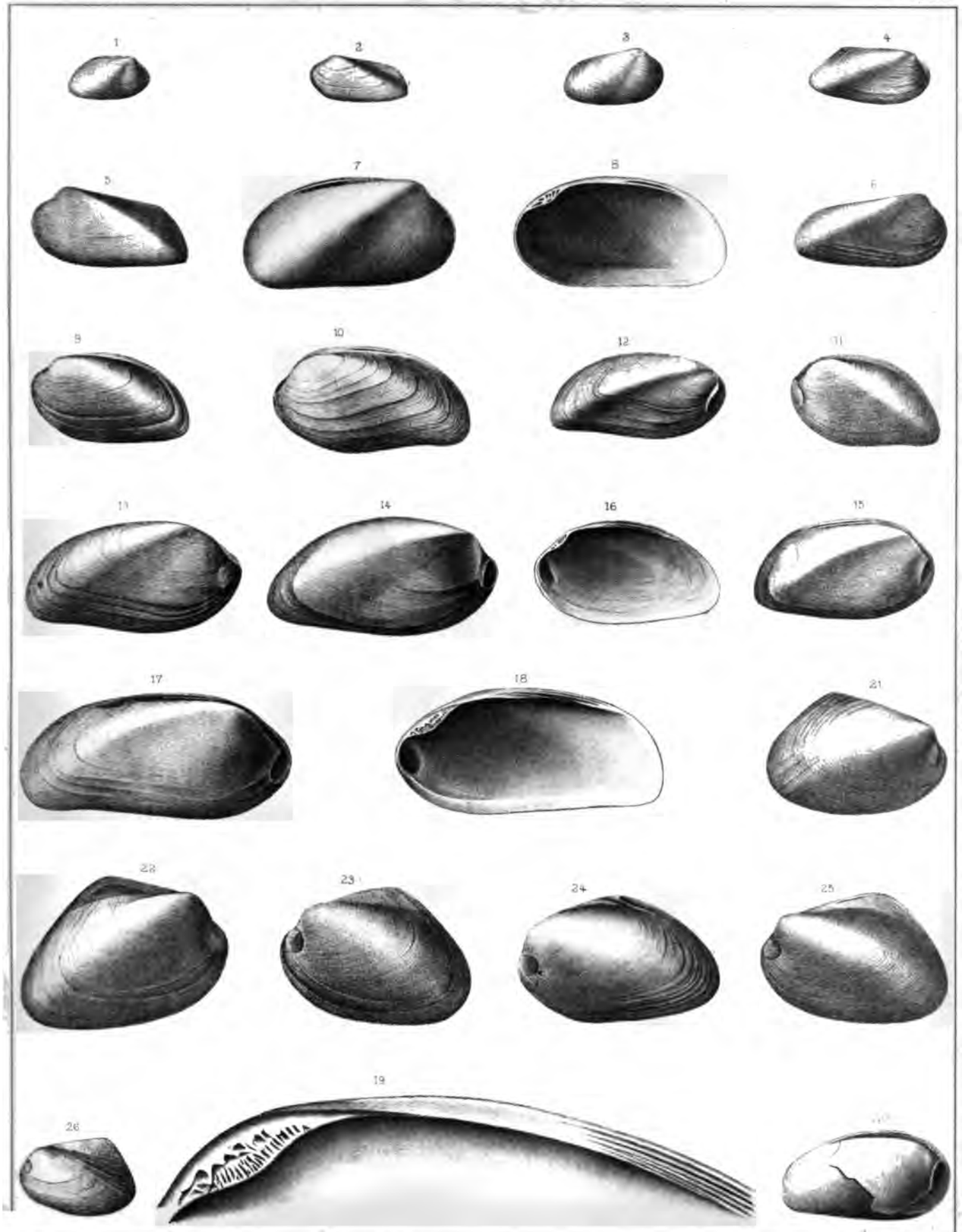
UPPER HELDERBERG GROUP.

(ARCIDÆ.)



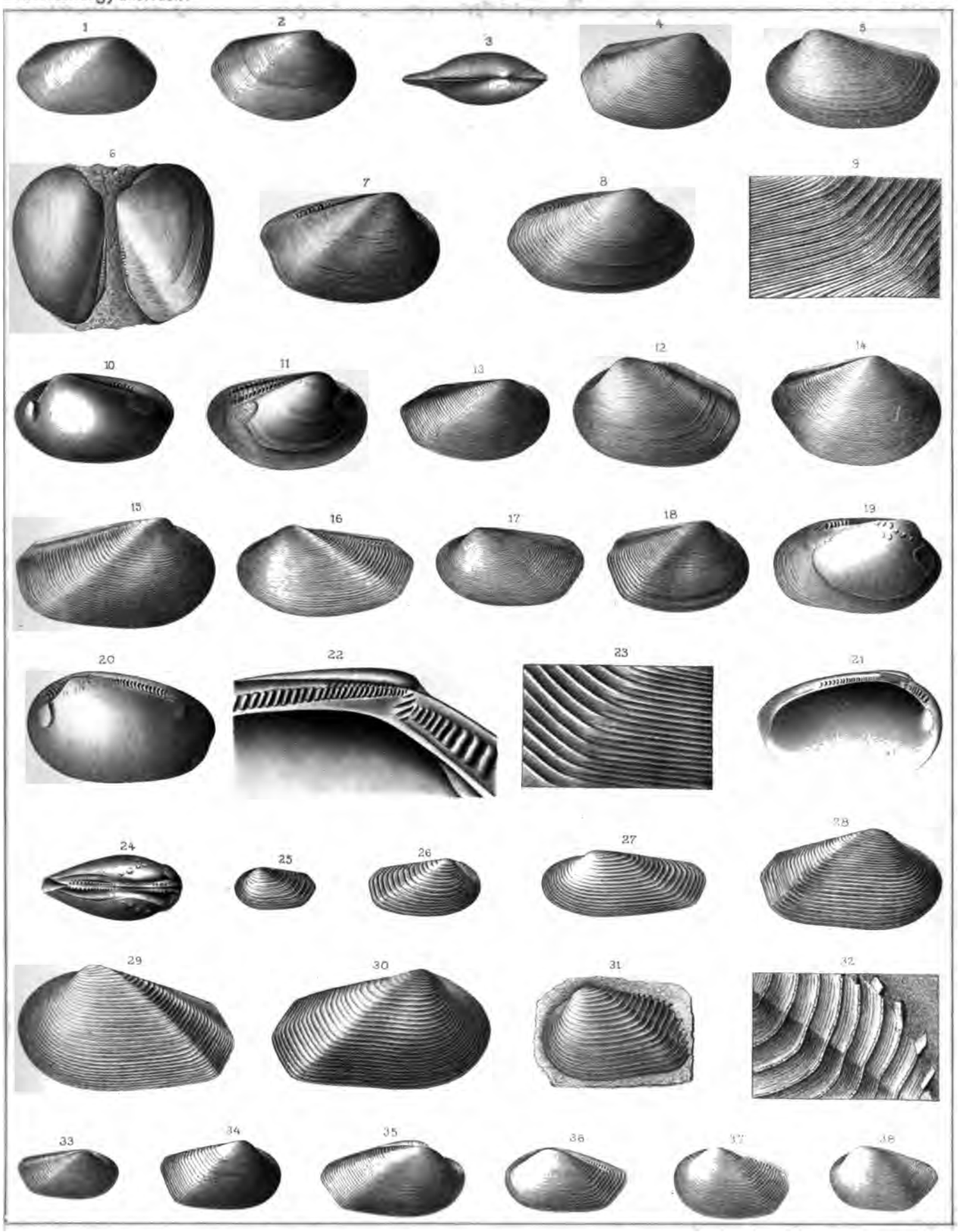
HAMILTON GROUP.

(NYASSIDÆ.)



HAMILTON & CHEMUNG GROUPS.

(NUCULIDÆ.)

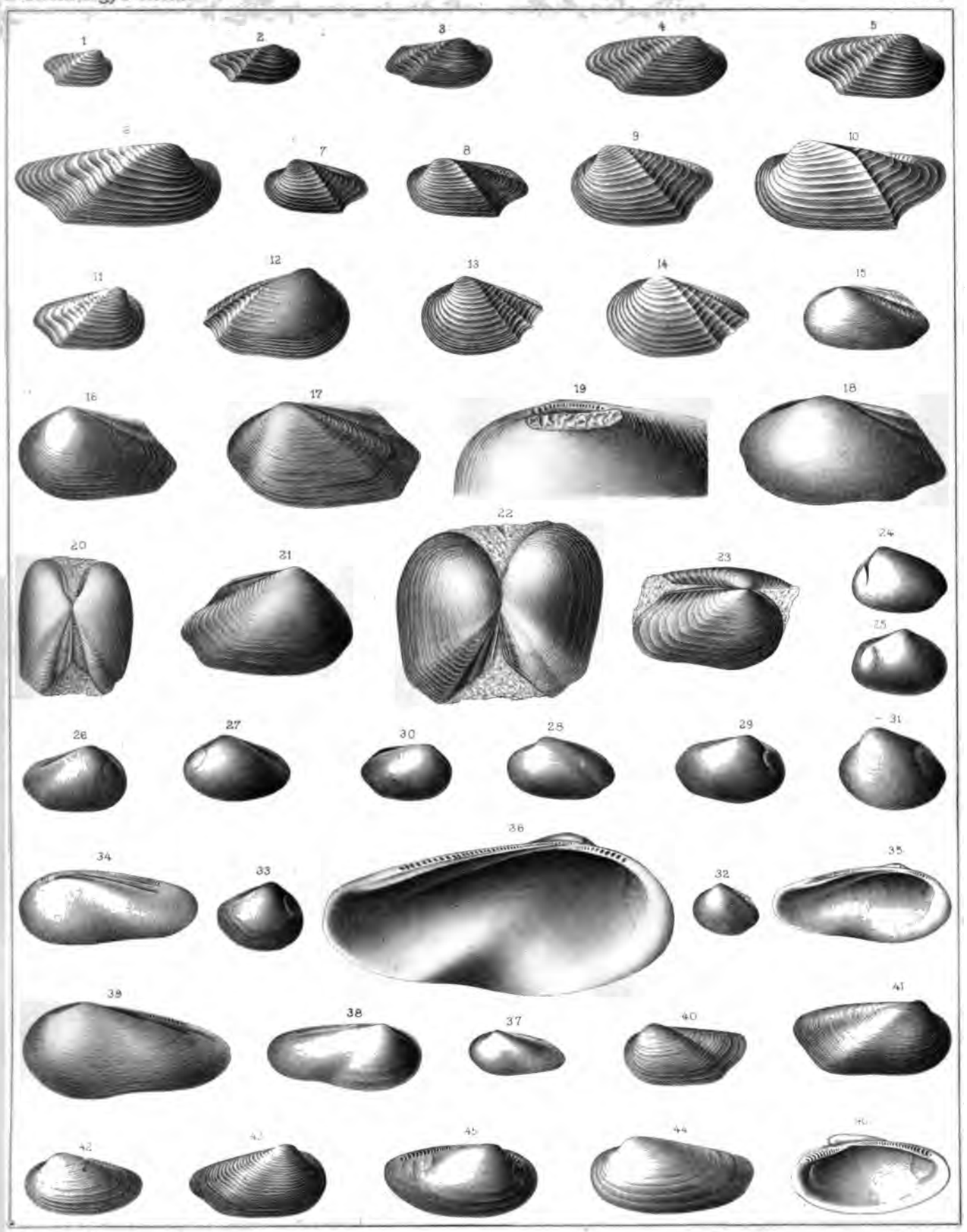


HAMILTON CHEMUNG & WAVERLY GROUPS.

(NUCULIDÆ.)

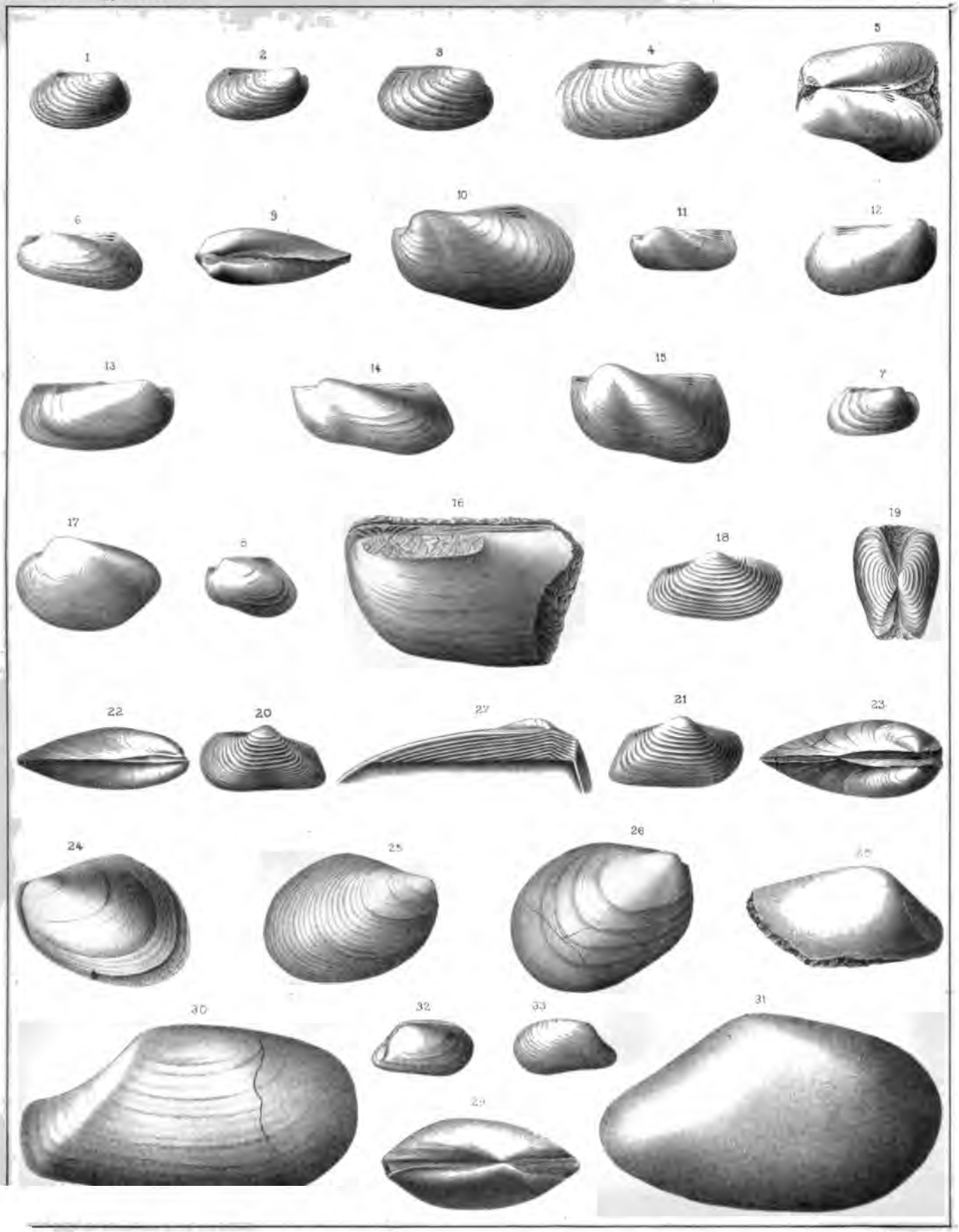
Palæontology N.Y. Vol V.

Plate L.



J. H. Simmons del.

Phil. Aet lith.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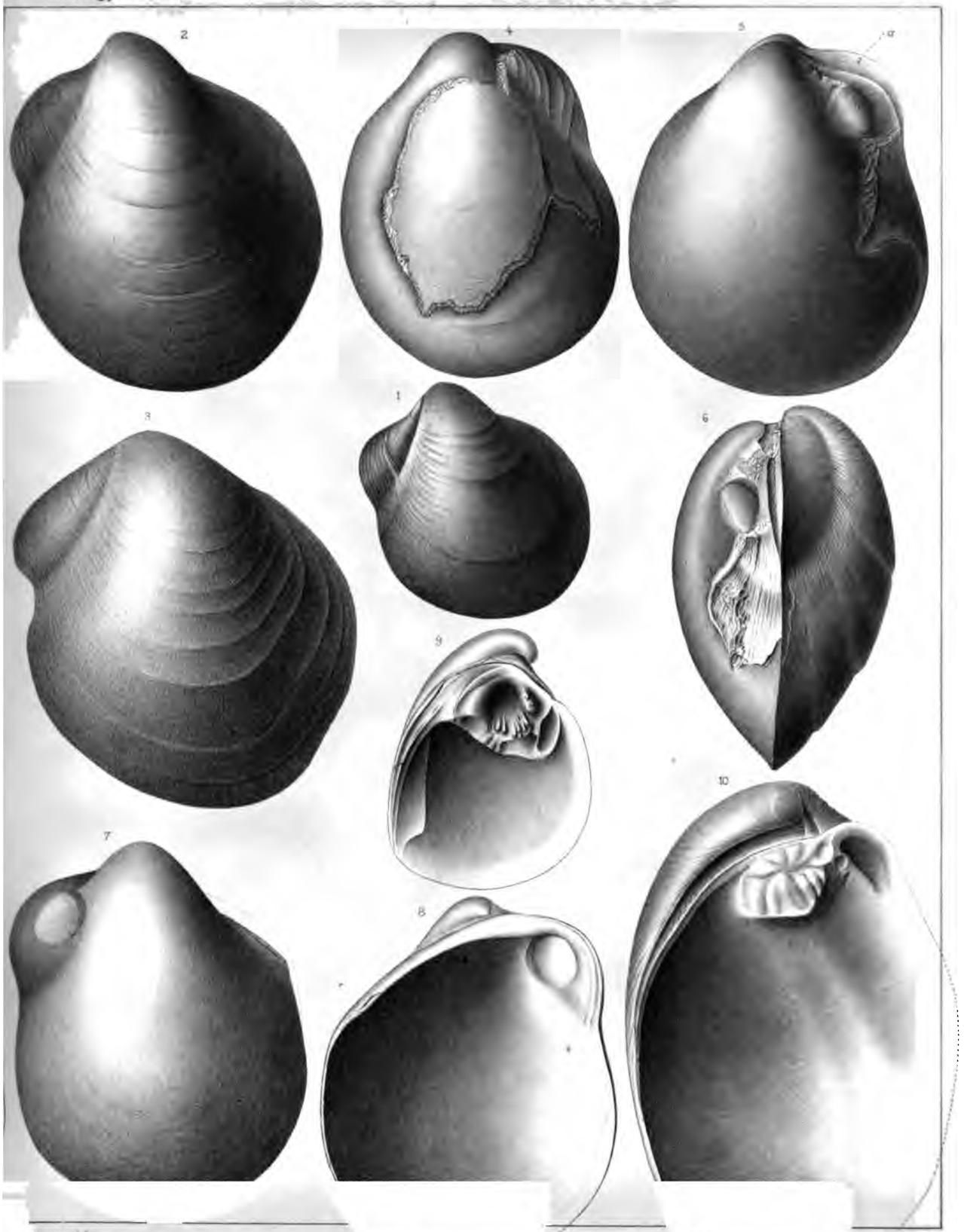
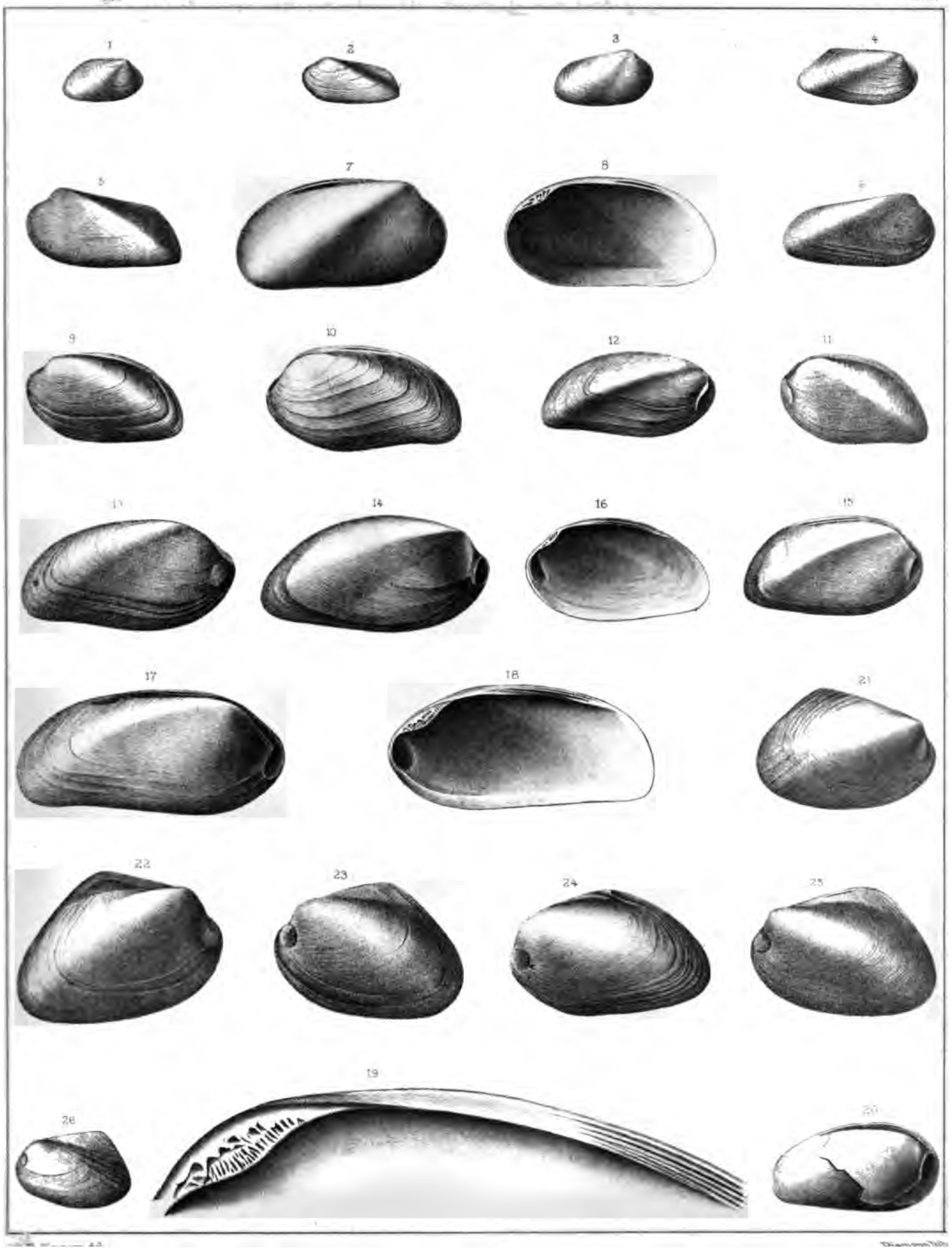
UPPER HELDERBERG GROUP.

(ARCIDÆ.)



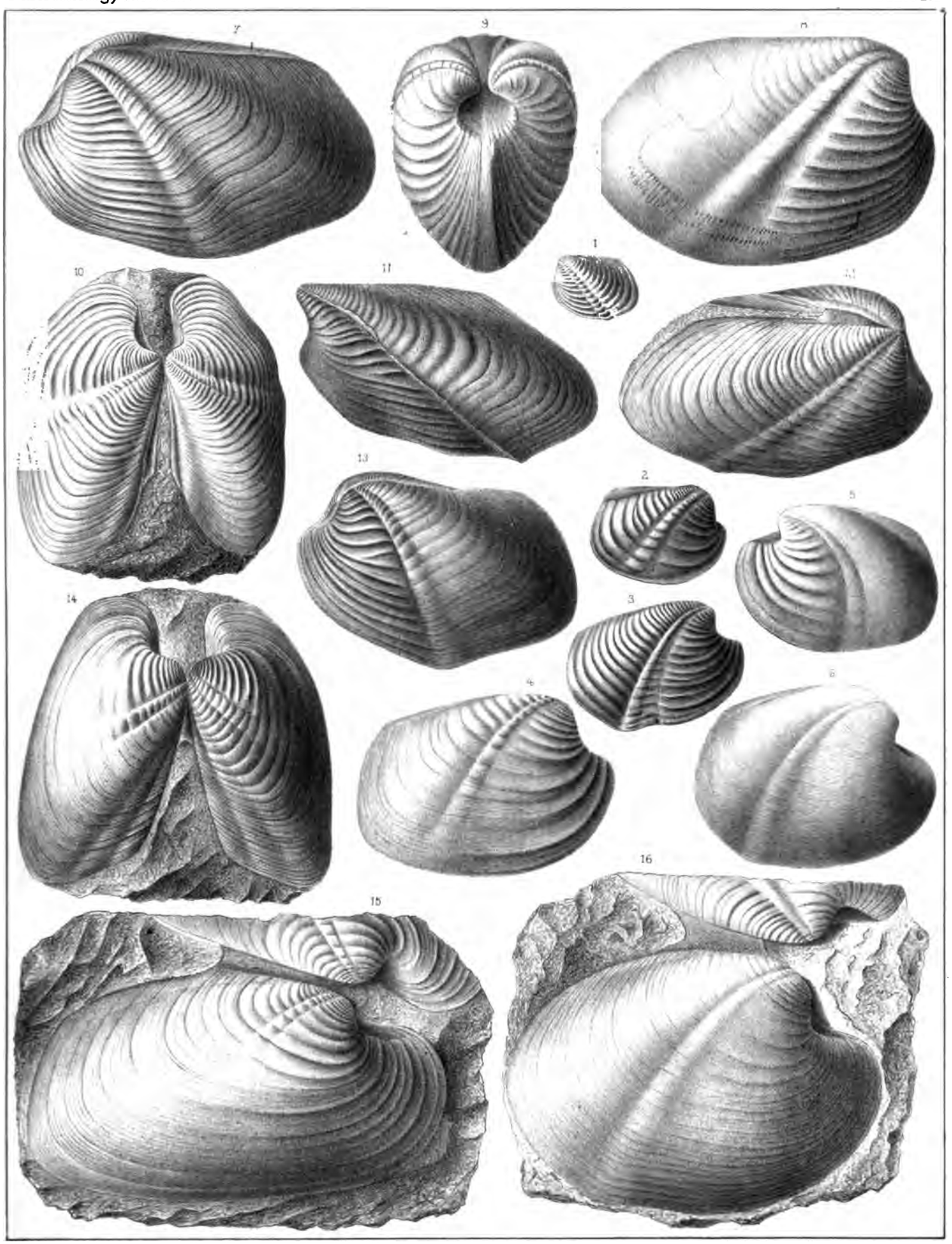
HAMILTON GROUP.

(NYASSIDÆ.)



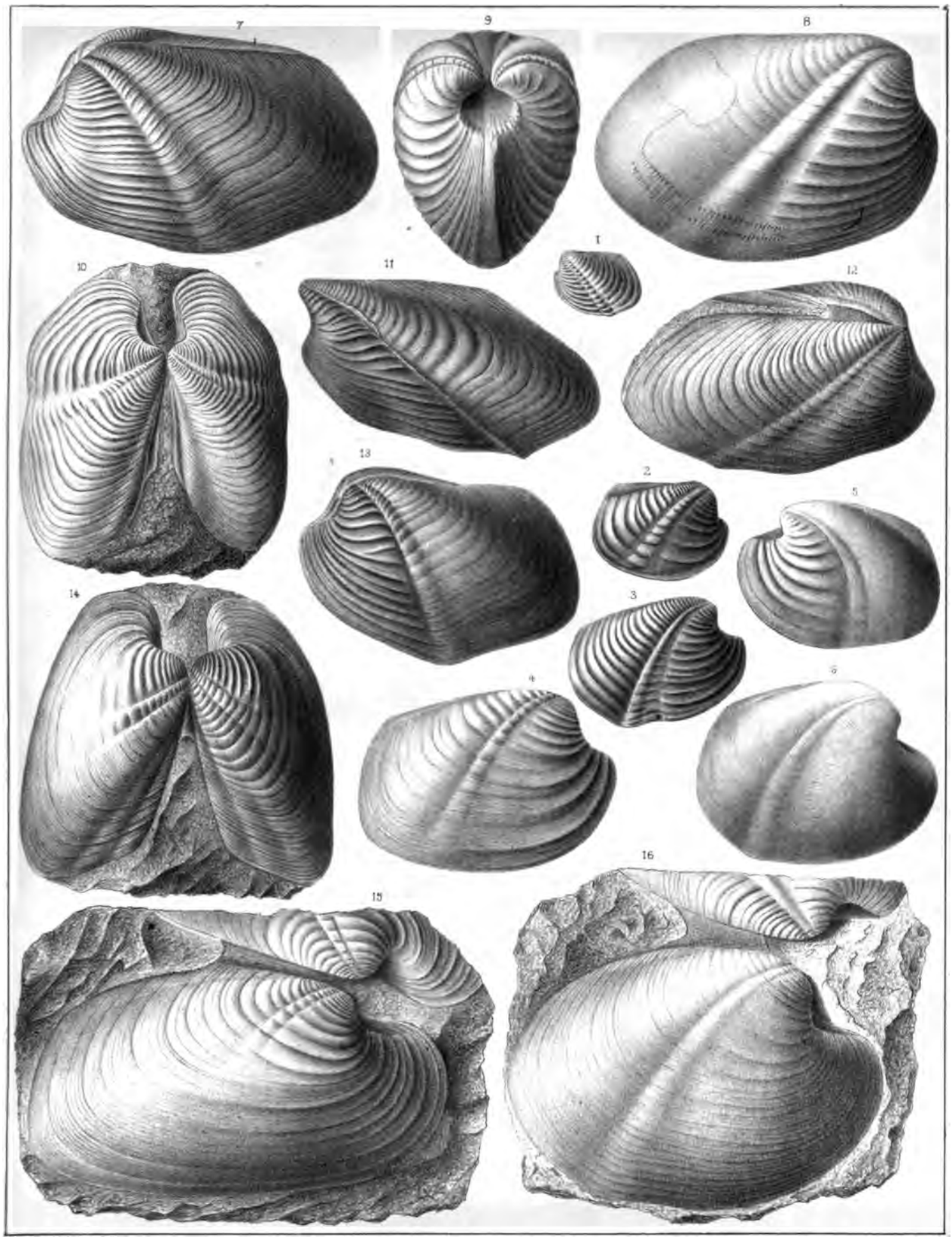
HAMILTON GROUP.

(GRAMMYSIDÆ.)



HAMILTON GROUP.

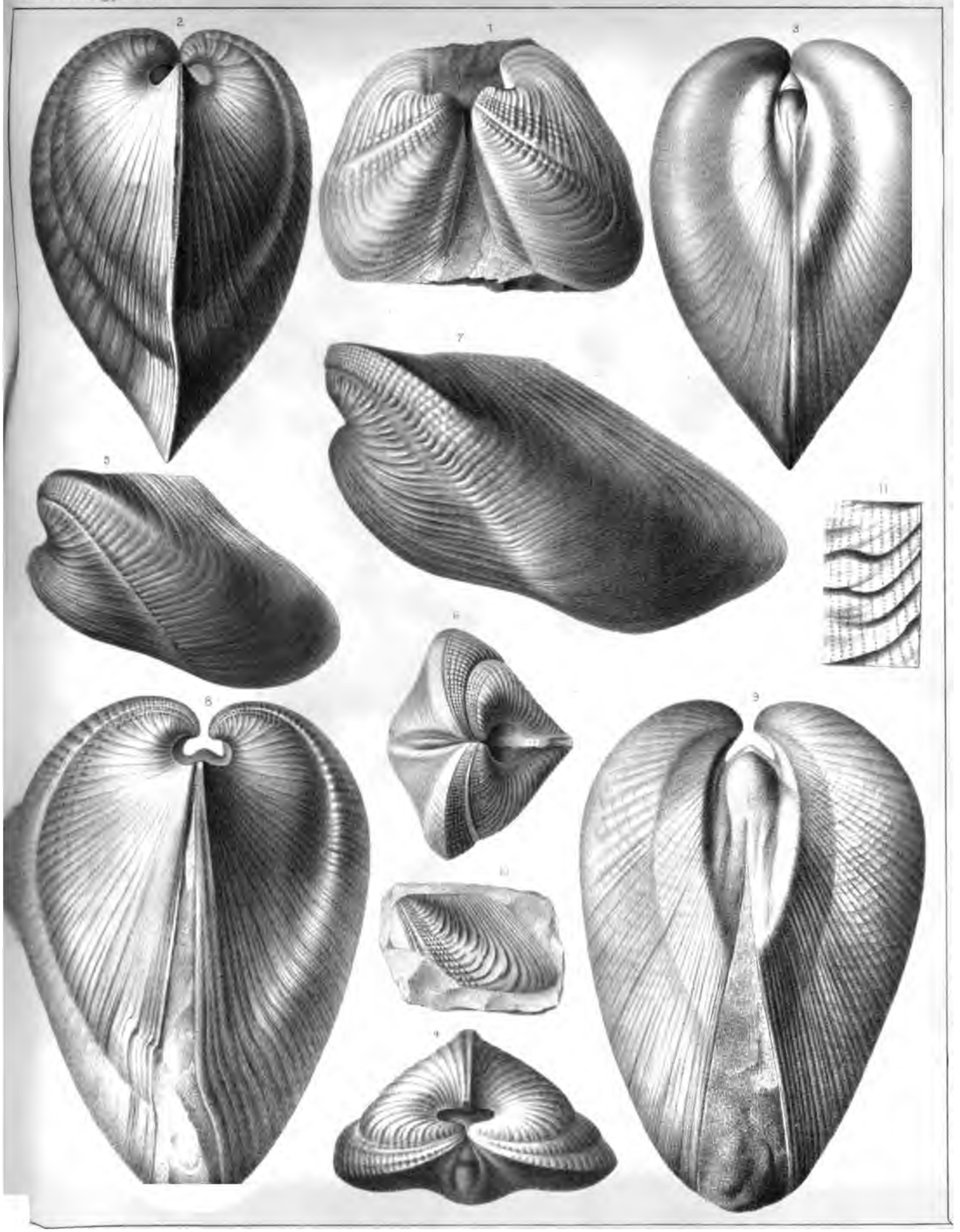
(GRAMMYSIDÆ.)



J. H. Emerton del.

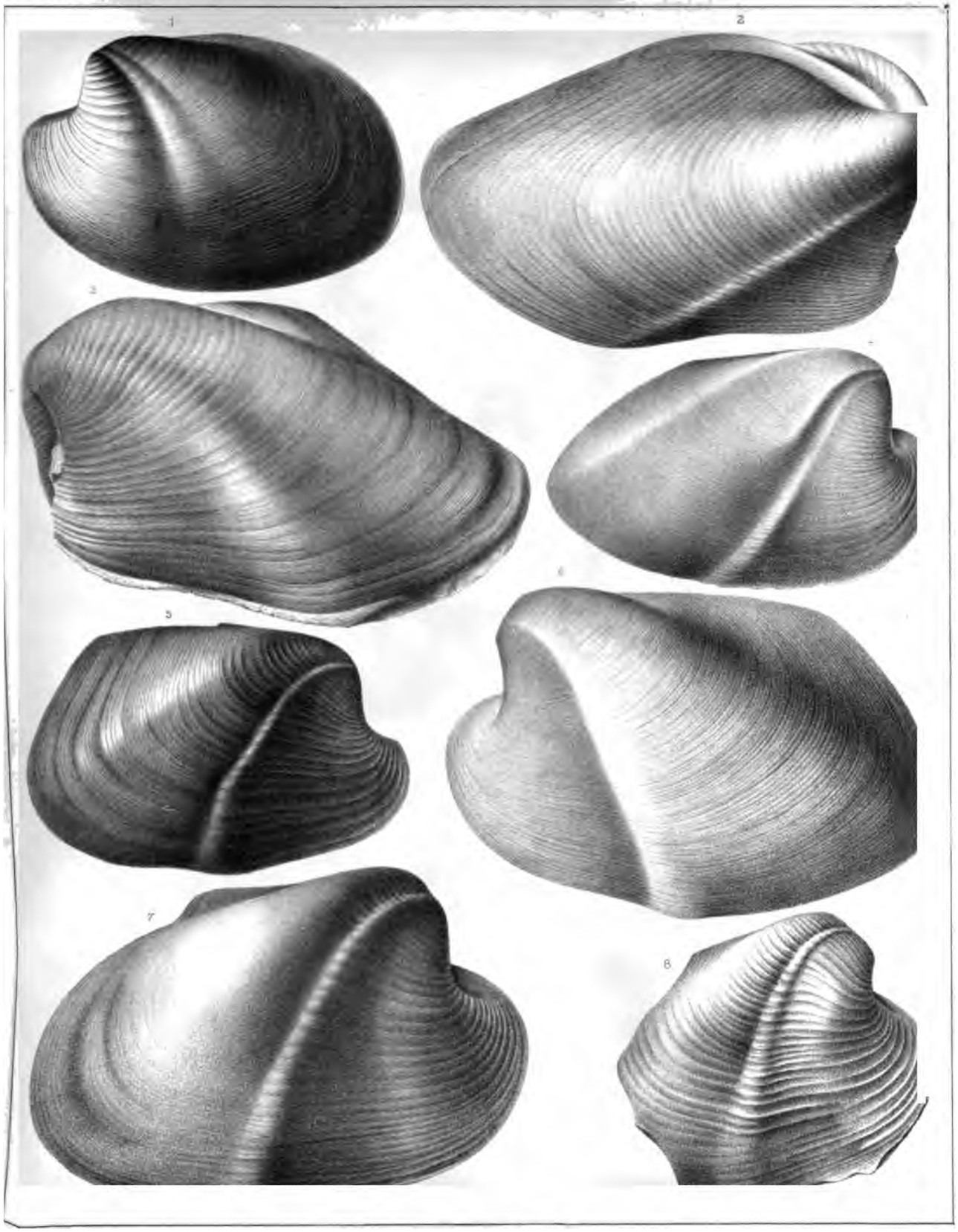
HAMILTON GROUP.

(GRAMMYSIDÆ.)



HAMILTON GROUP.

(GRAMMYSIDÆ.)



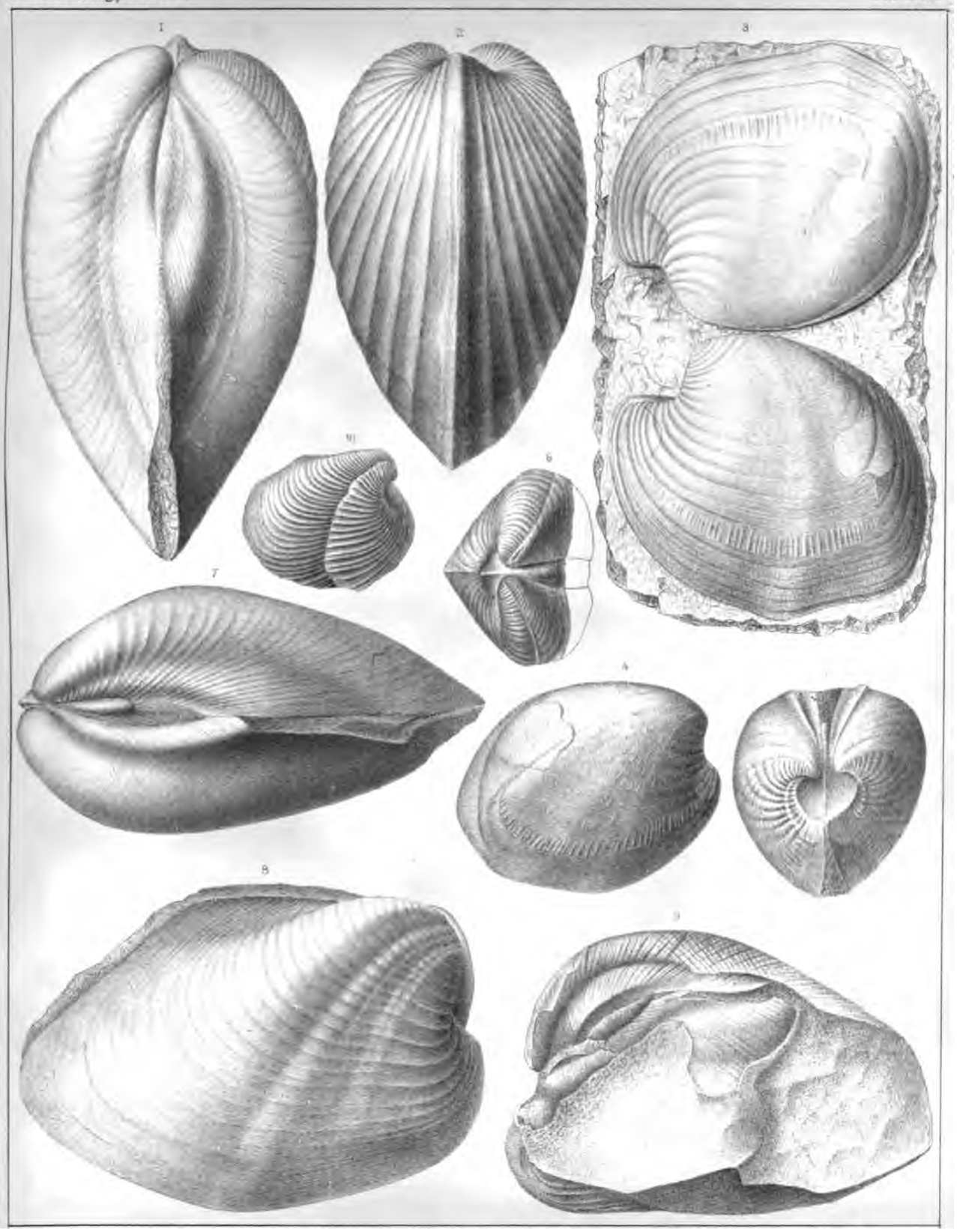
J. H. Emerton, del.

Sarthorn, lith.

HAMILTON & CHEMUNG GROUPS.

(GRAMMYSIDÆ)

Palæontology N.Y. Vol V. Plate LVII.



J. H. Emerton, del.

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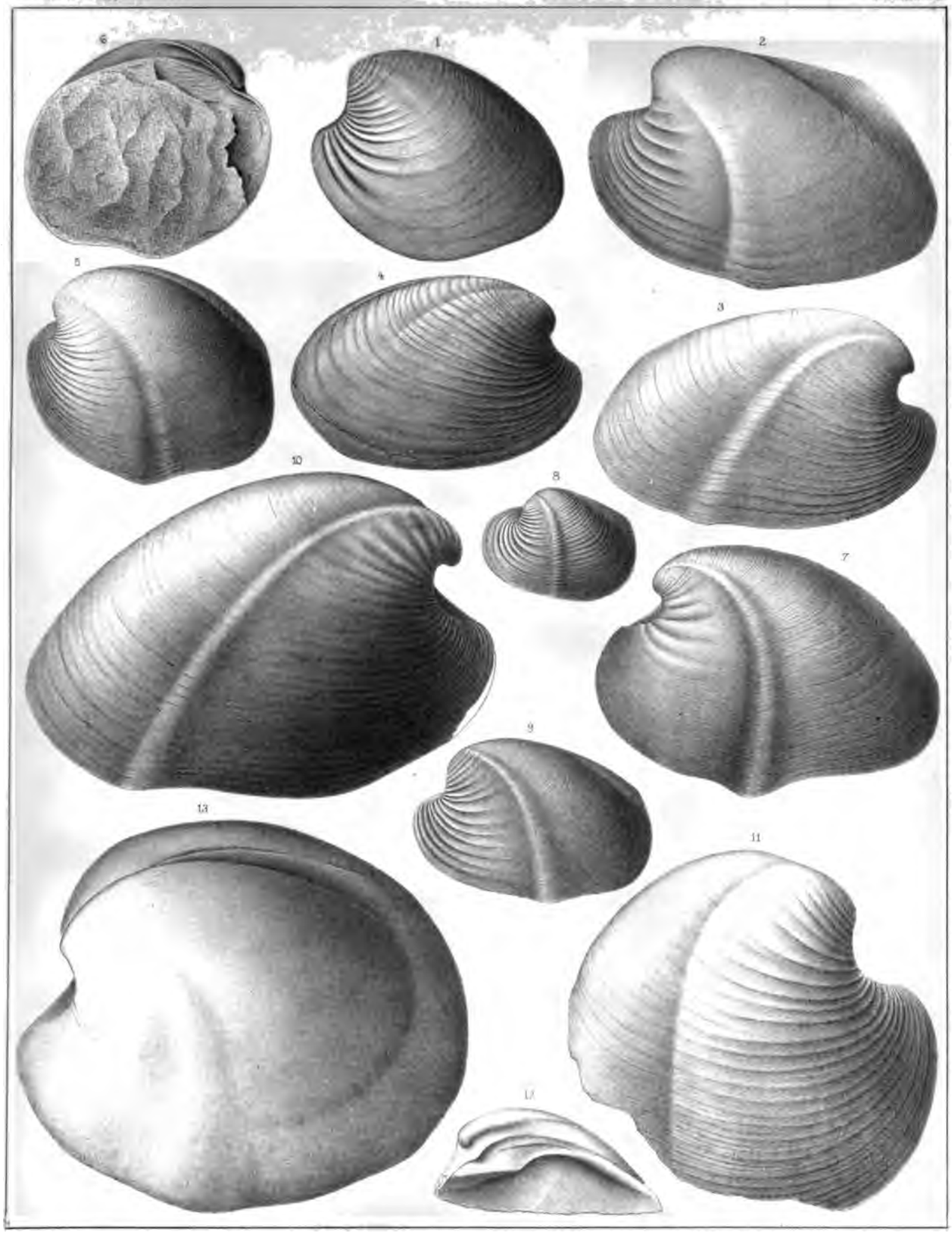
CHEMUNG GROUP.

(GRAMMYSIDÆ.)



J. H. Emerton del

Photomanlith

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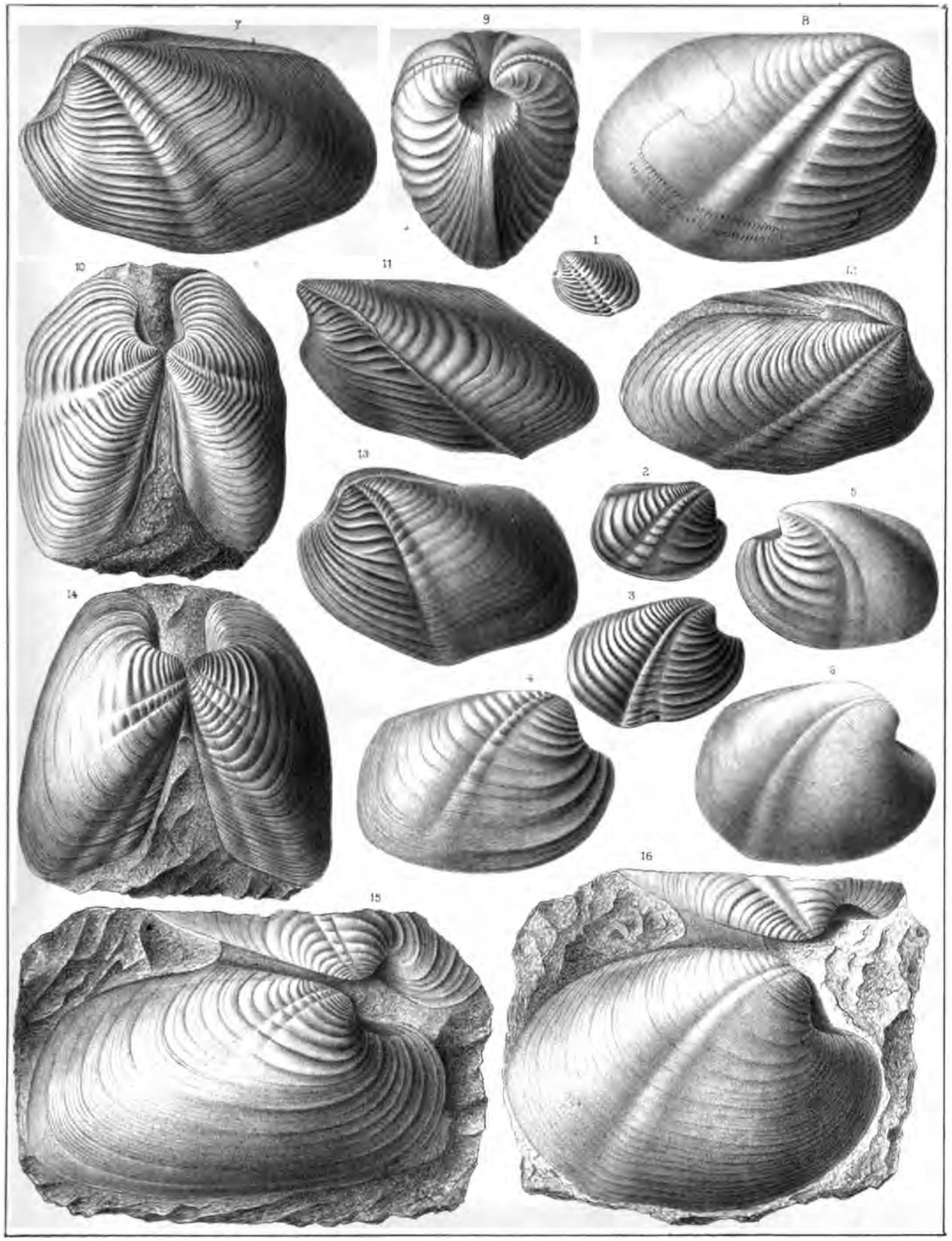
HAMILTON GROUP.

(GRAMMYSIDÆ.)

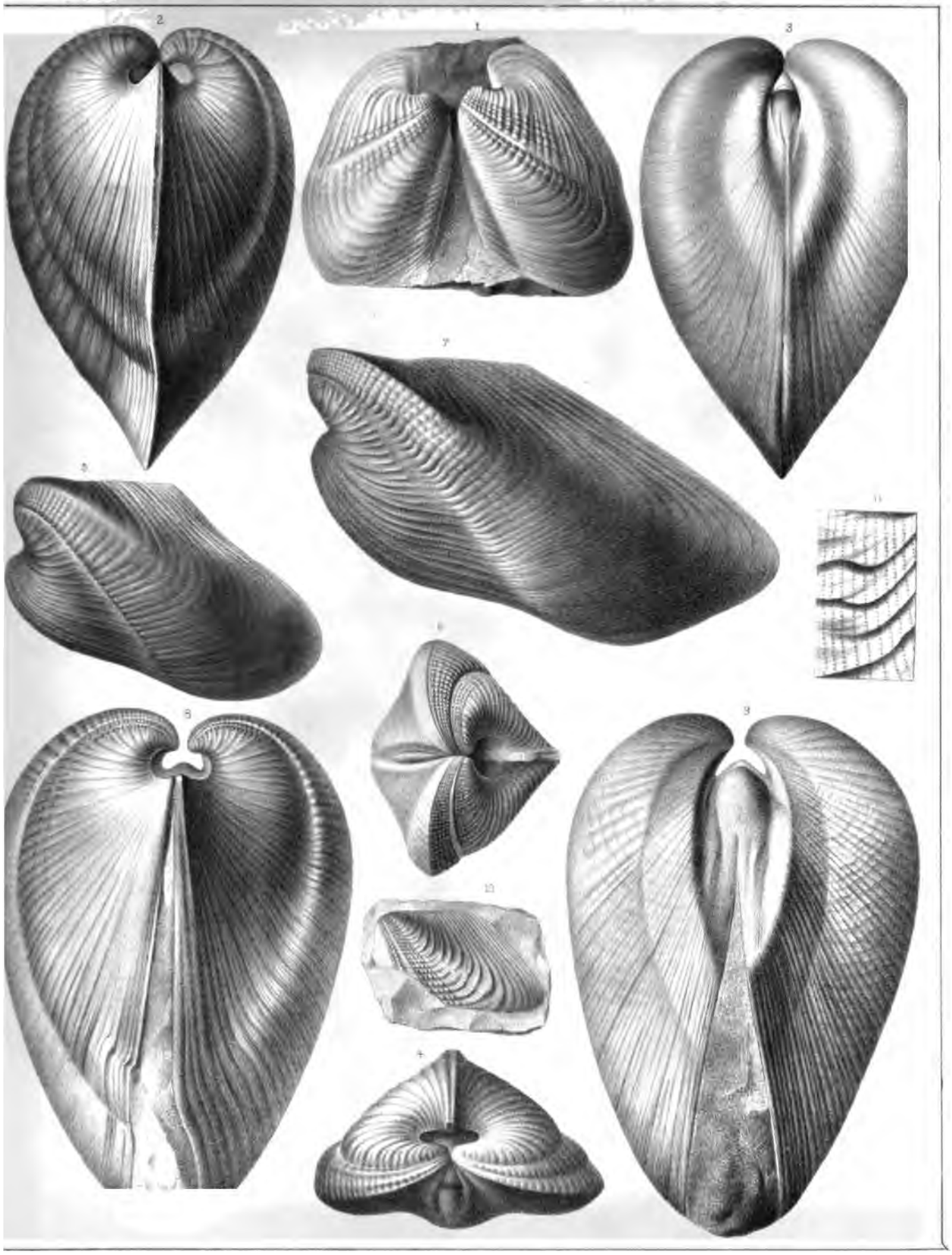
Palæontology N.Y. Vol. V. Plate LIV.



J. H. Emerton del.

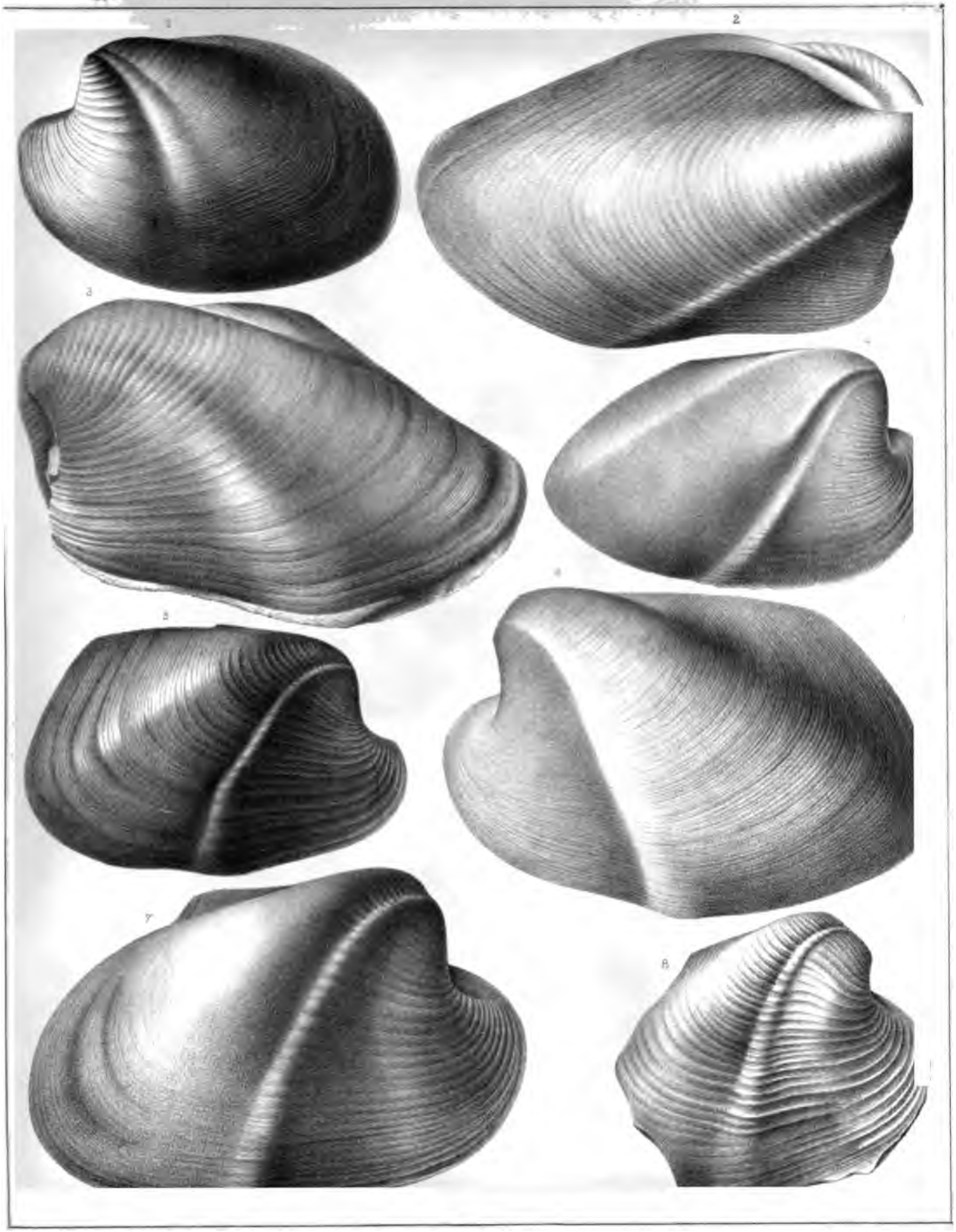
HAMILTON GROUP.

(GRAMMYSIDÆ.)



HAMILTON GROUP.

(GRAMMYSIDÆ.)

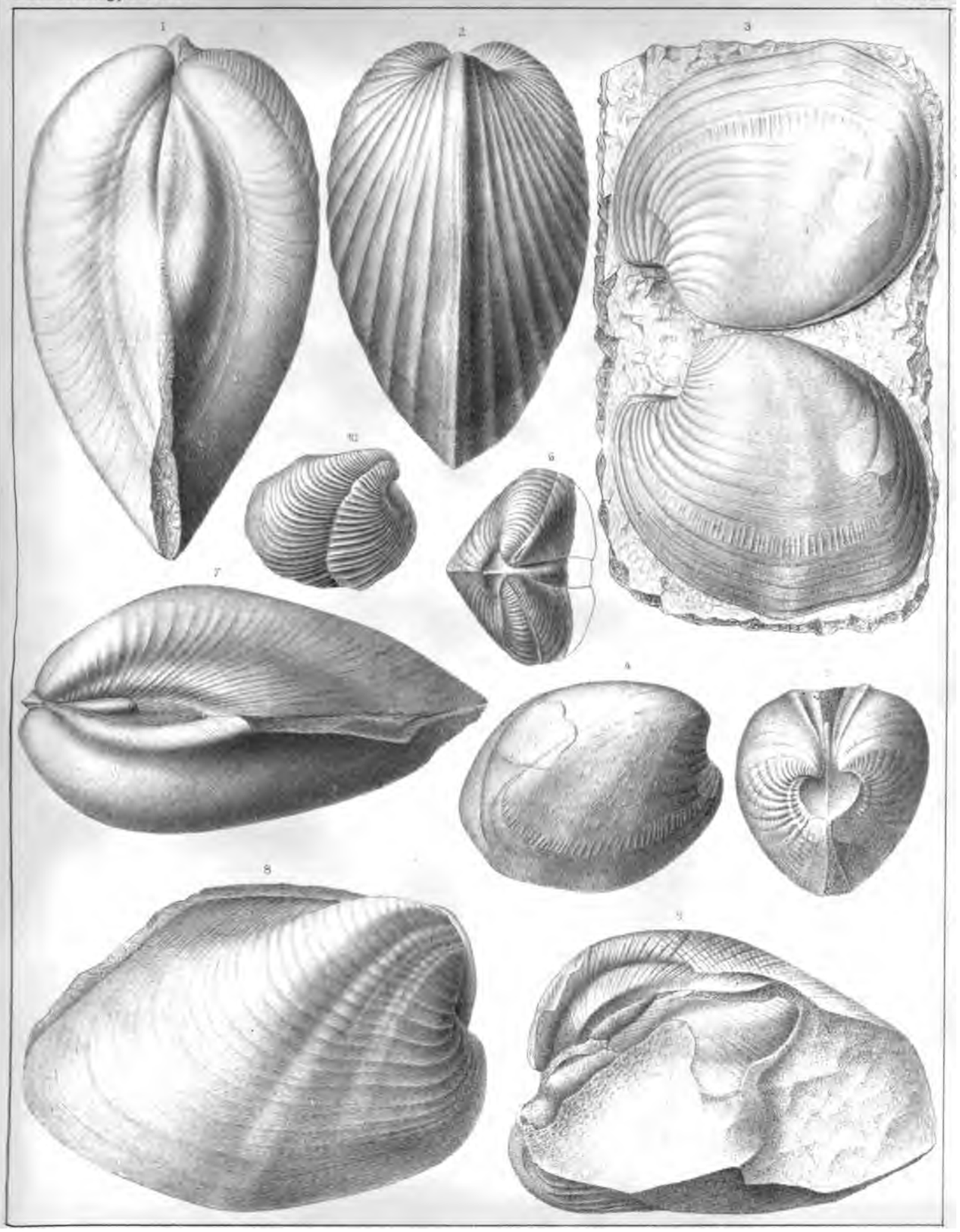


J.H. Emerton, del.

Sarthe, lith.

HAMILTON & CHEMUNG GROUPS.

(GRAMMYSIDÆ.)



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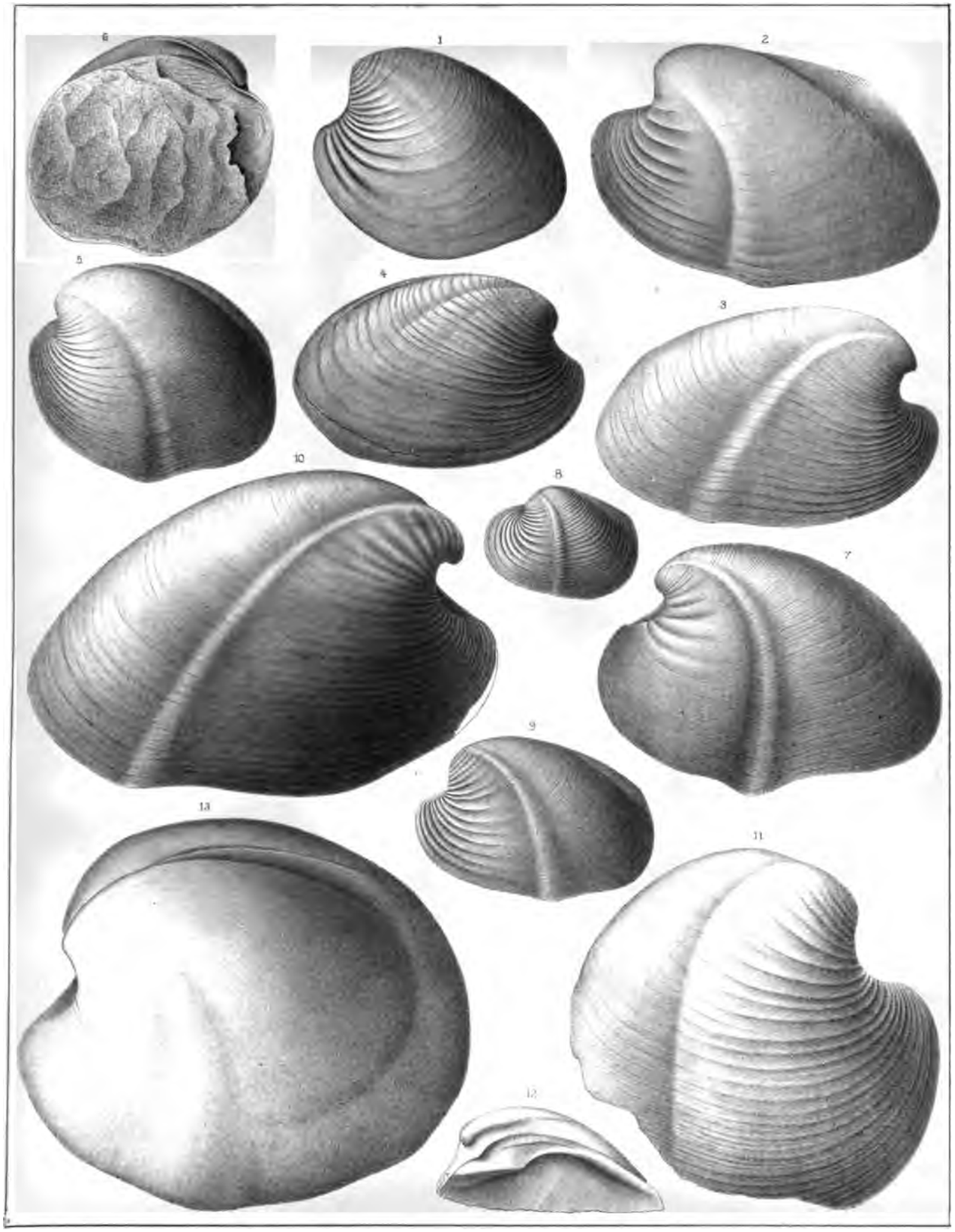
CHEMUNG GROUP.

(GRAMMYSIDÆ.)



J. H. Emerson, del.

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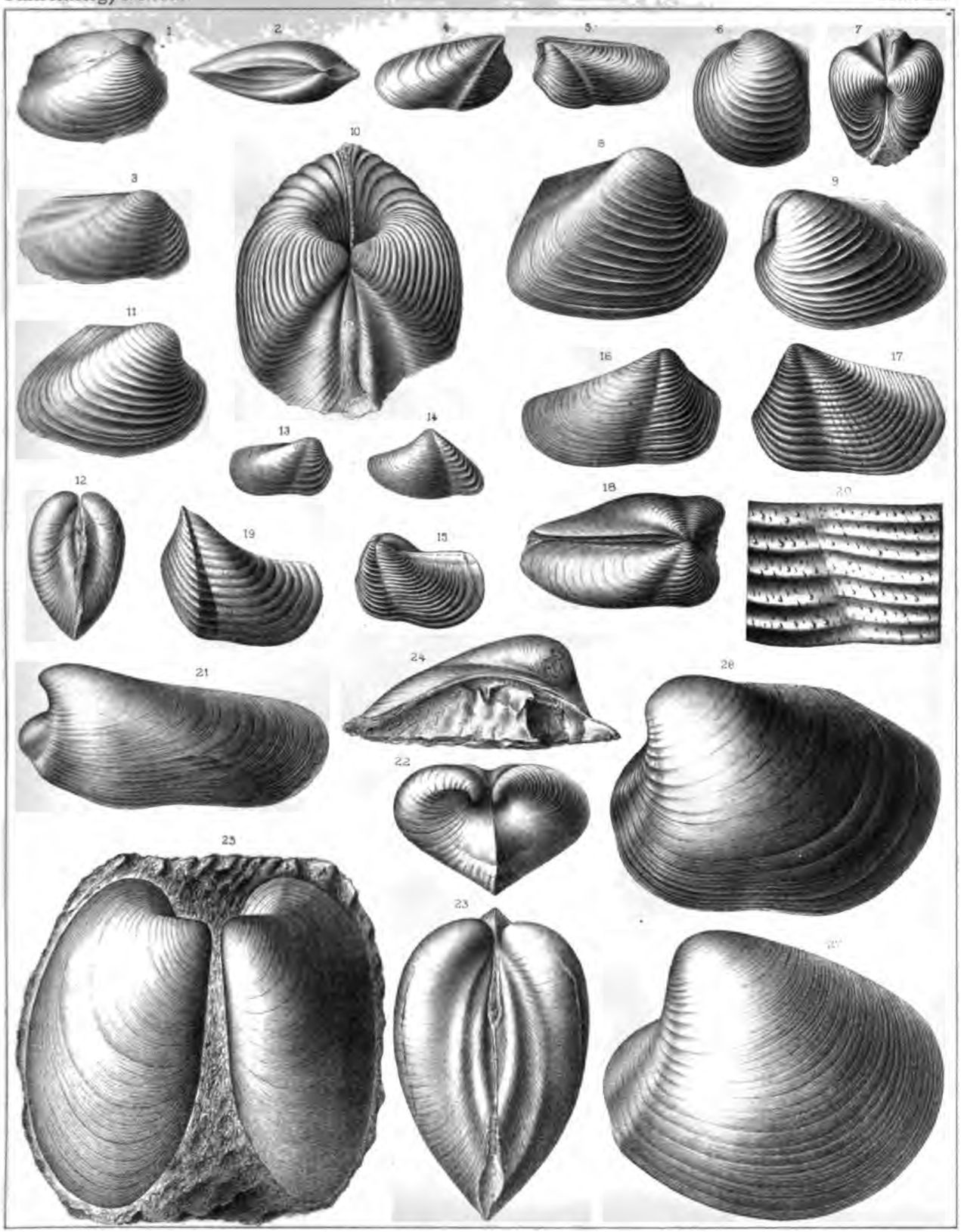
UPPER HELDERBERG & HAMILTON GROUPS.

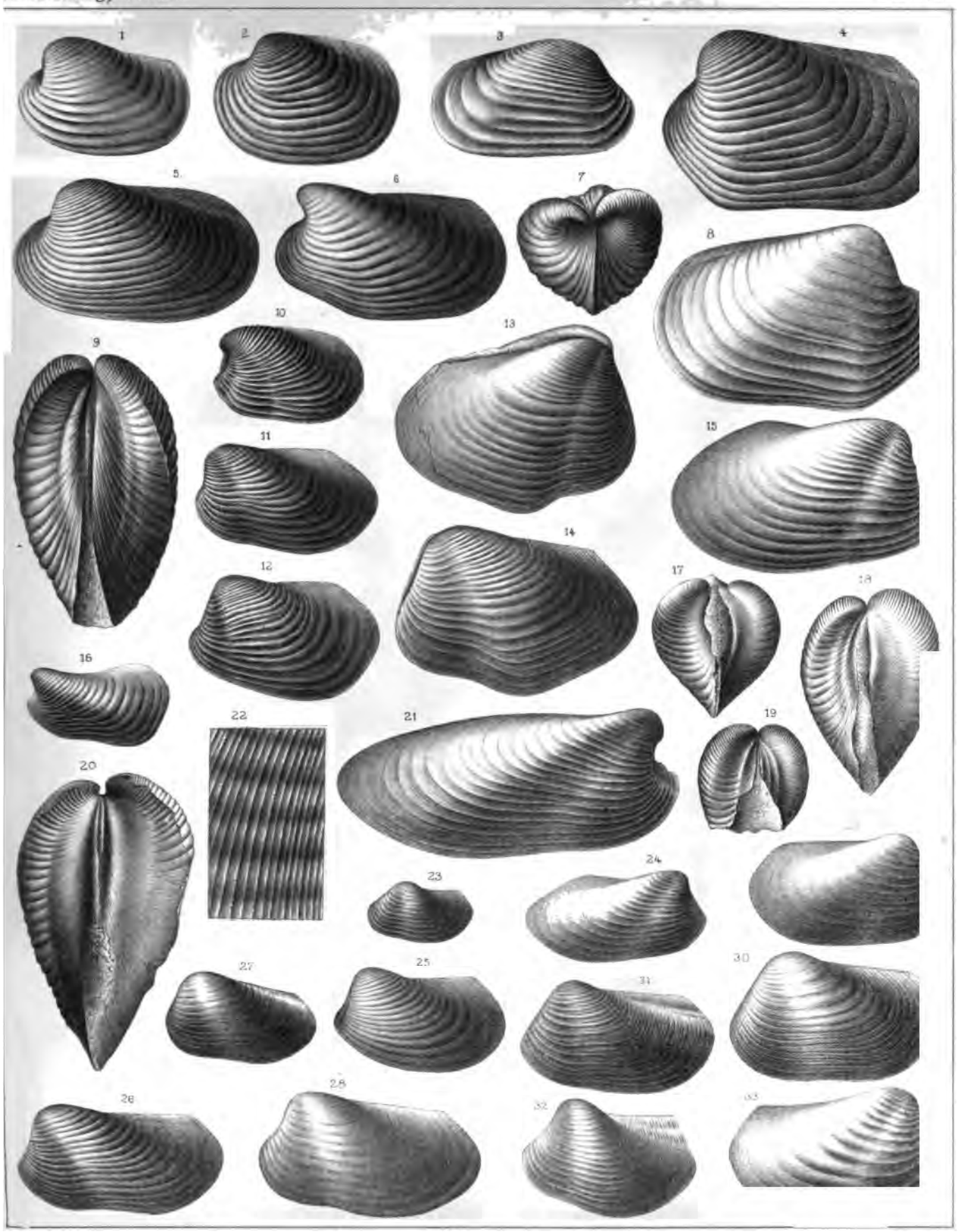
(GRAMMYSIIDÆ.)



J. H. Emerton del.

CHEMUNG & WAVERLY GROUPS.

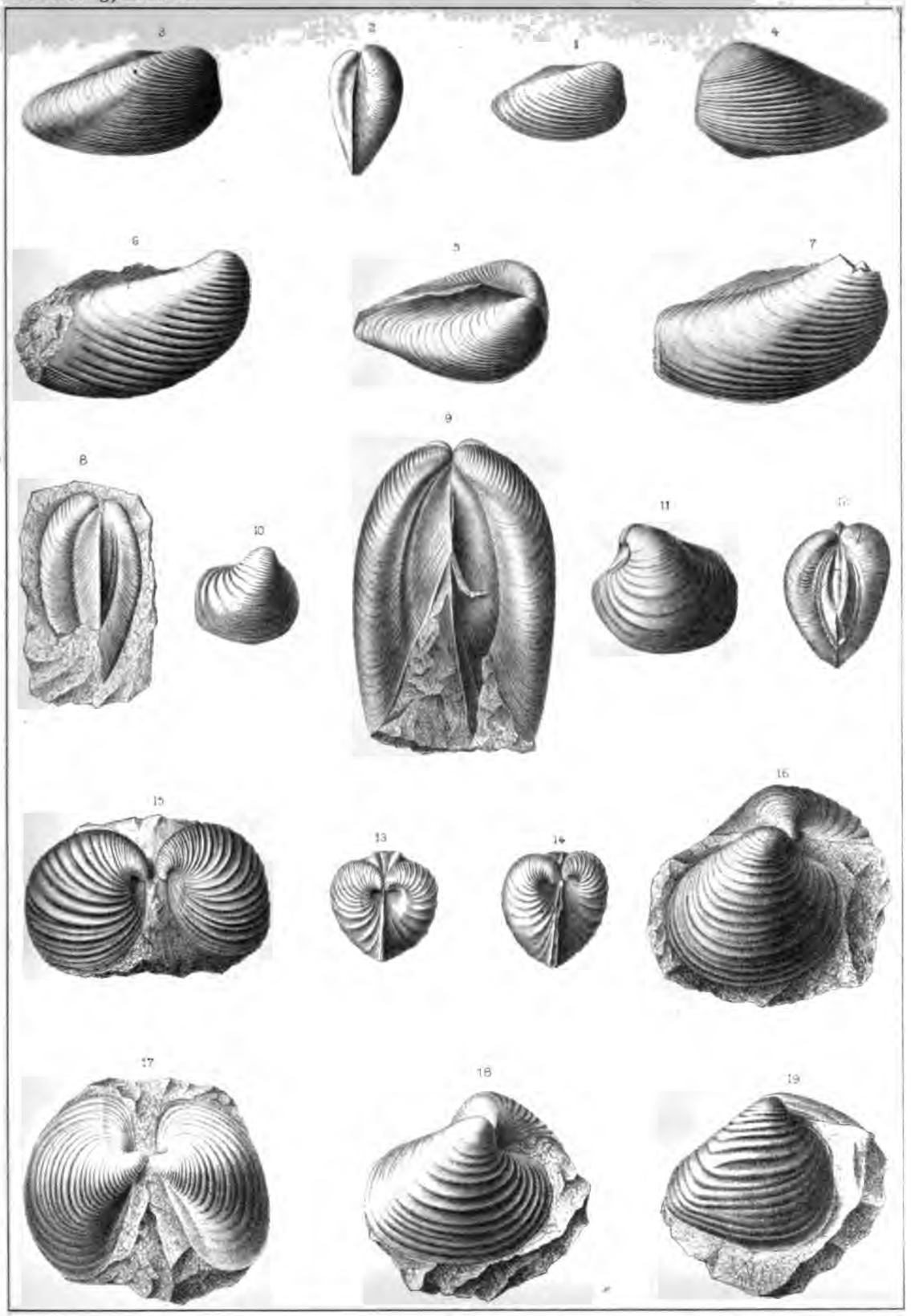
(GRAMMYSIIDÆ.)



J.H. Emerson del.

HAMILTON GROUP.

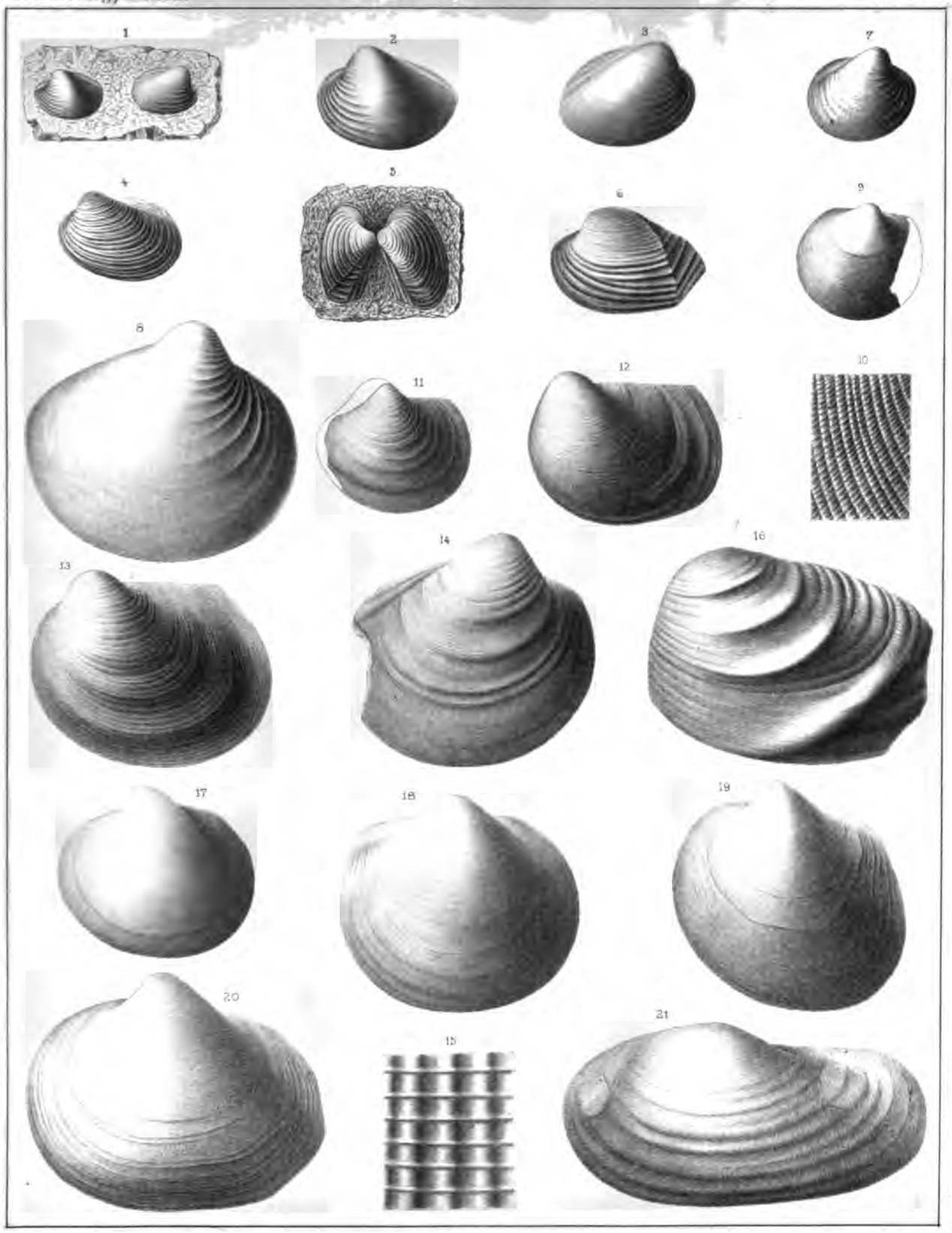
(CARDIOMORPHIDÆ.)



J.H. Emerton del. Kiernan lith.

HAMILTON & CHEMUNG GROUPS.

(CARDIOMORPHIDÆ.)



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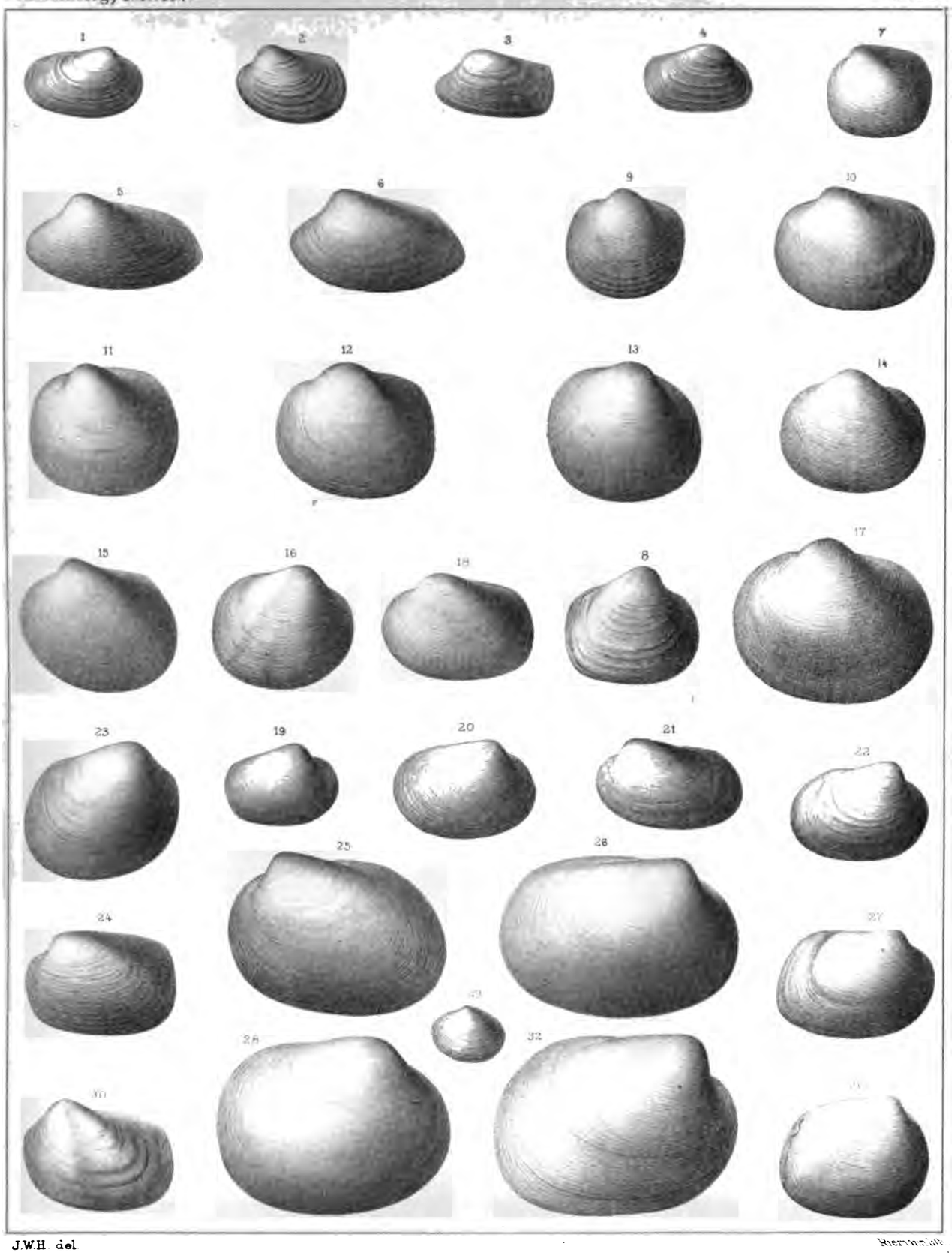
(CARDIOMORPHIDÆ.)

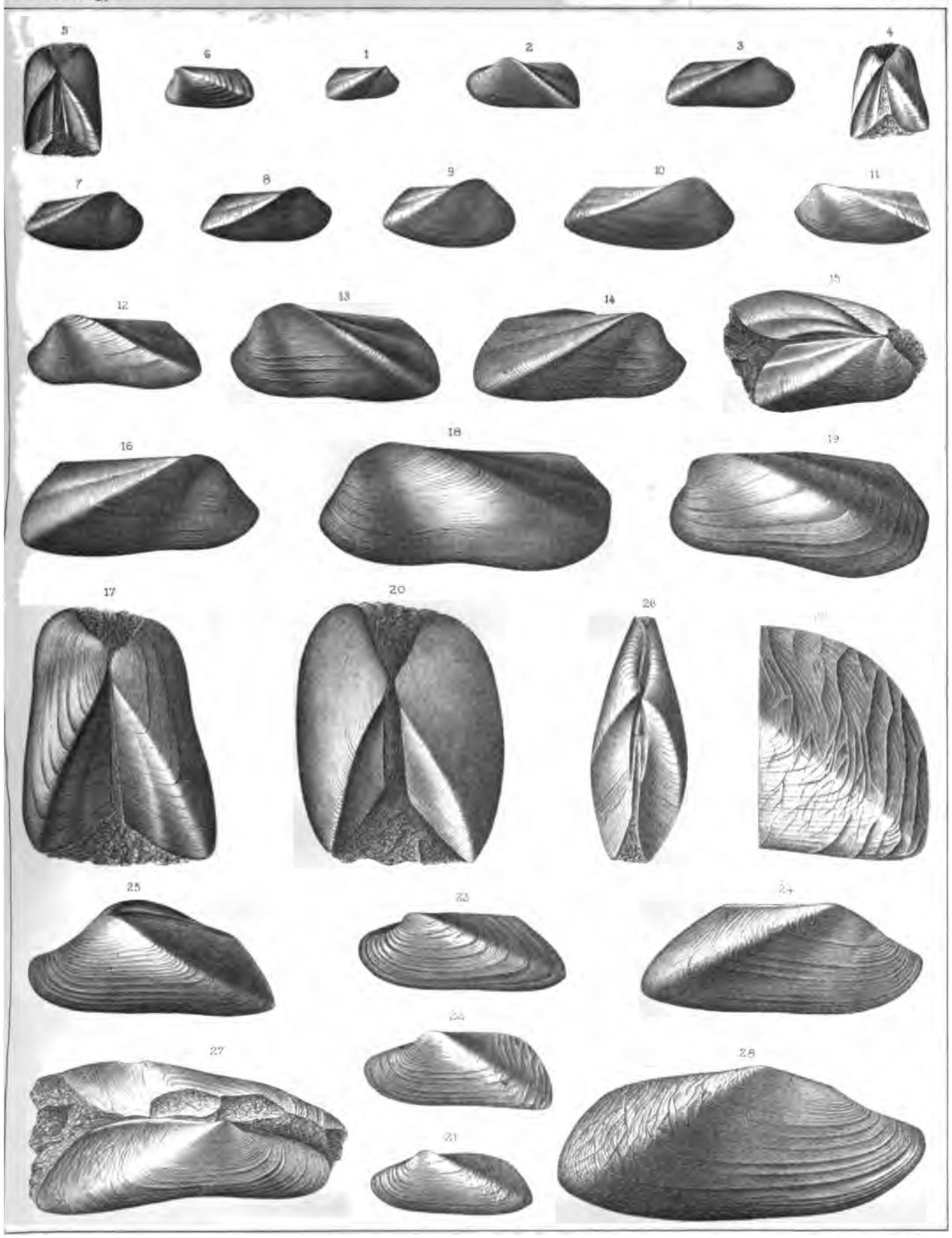


J.W.H. del.

Bierstadt lith.

HAMILTON GROUP.

(SANGUINOLITIDÆ.)



G.B. Simpson del.

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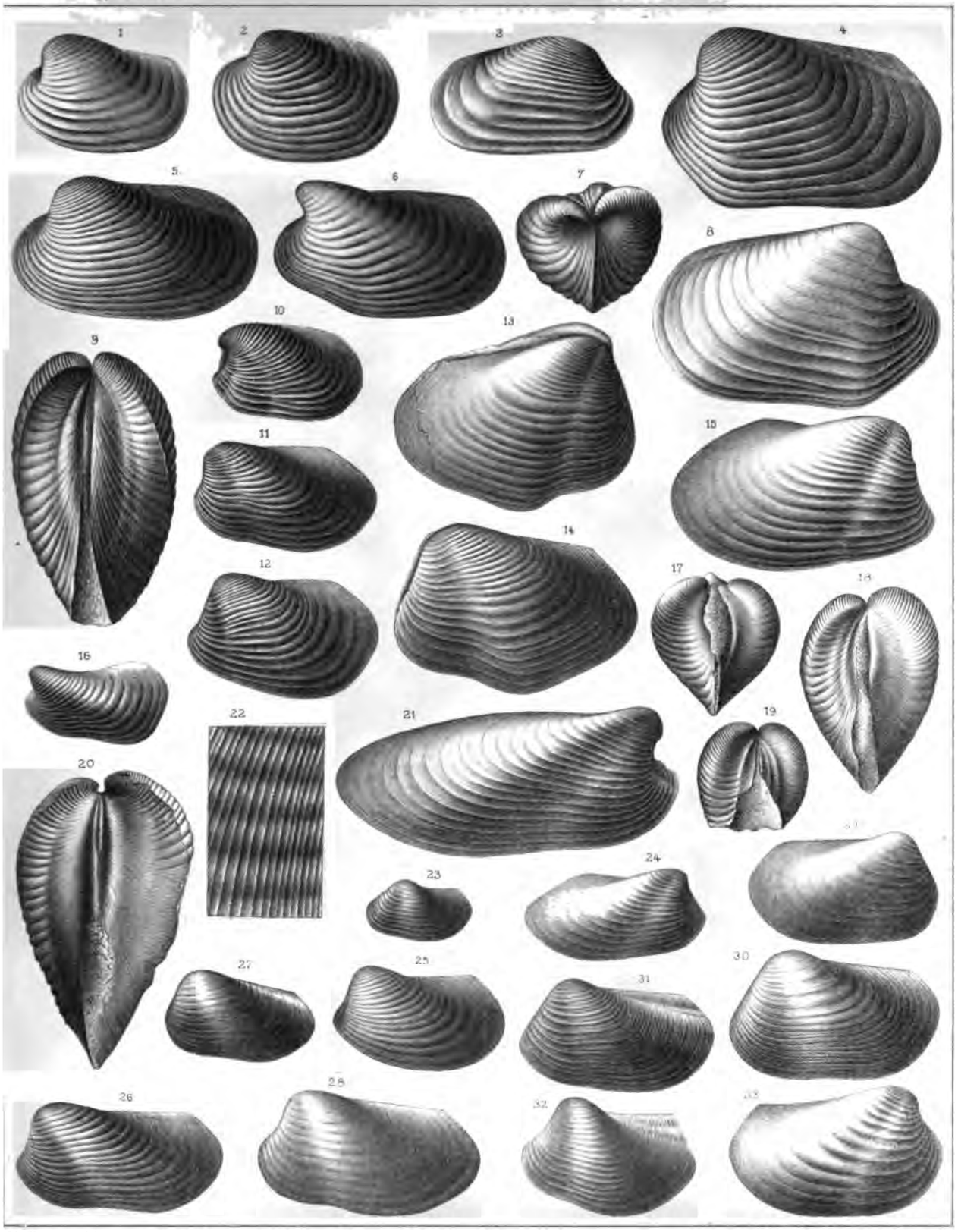
CHEMUNG & WAVERLY GROUPS.

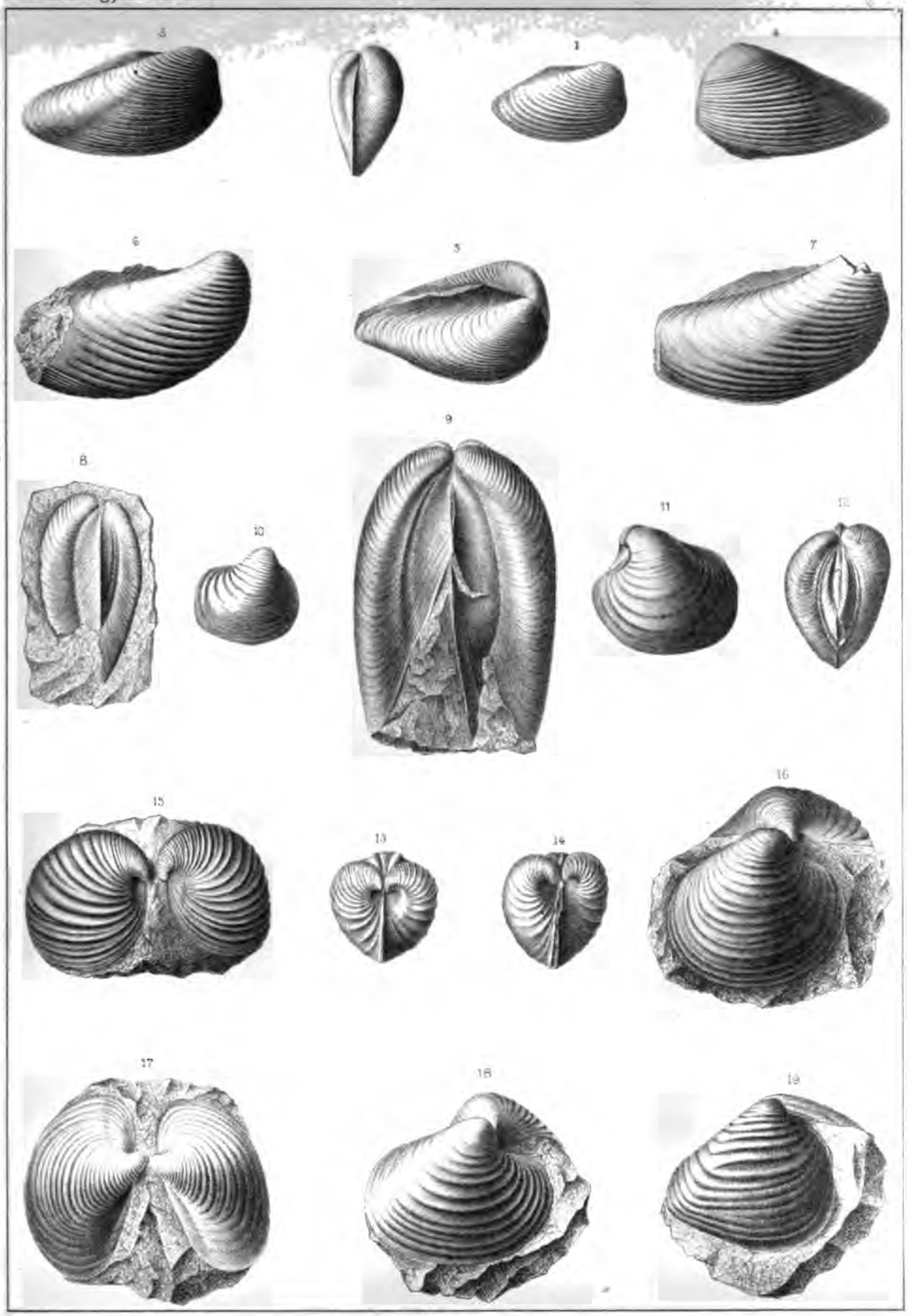
(GRAMMYSIIDÆ.)



J. H. Emerson del.

HAMILTON GROUP.

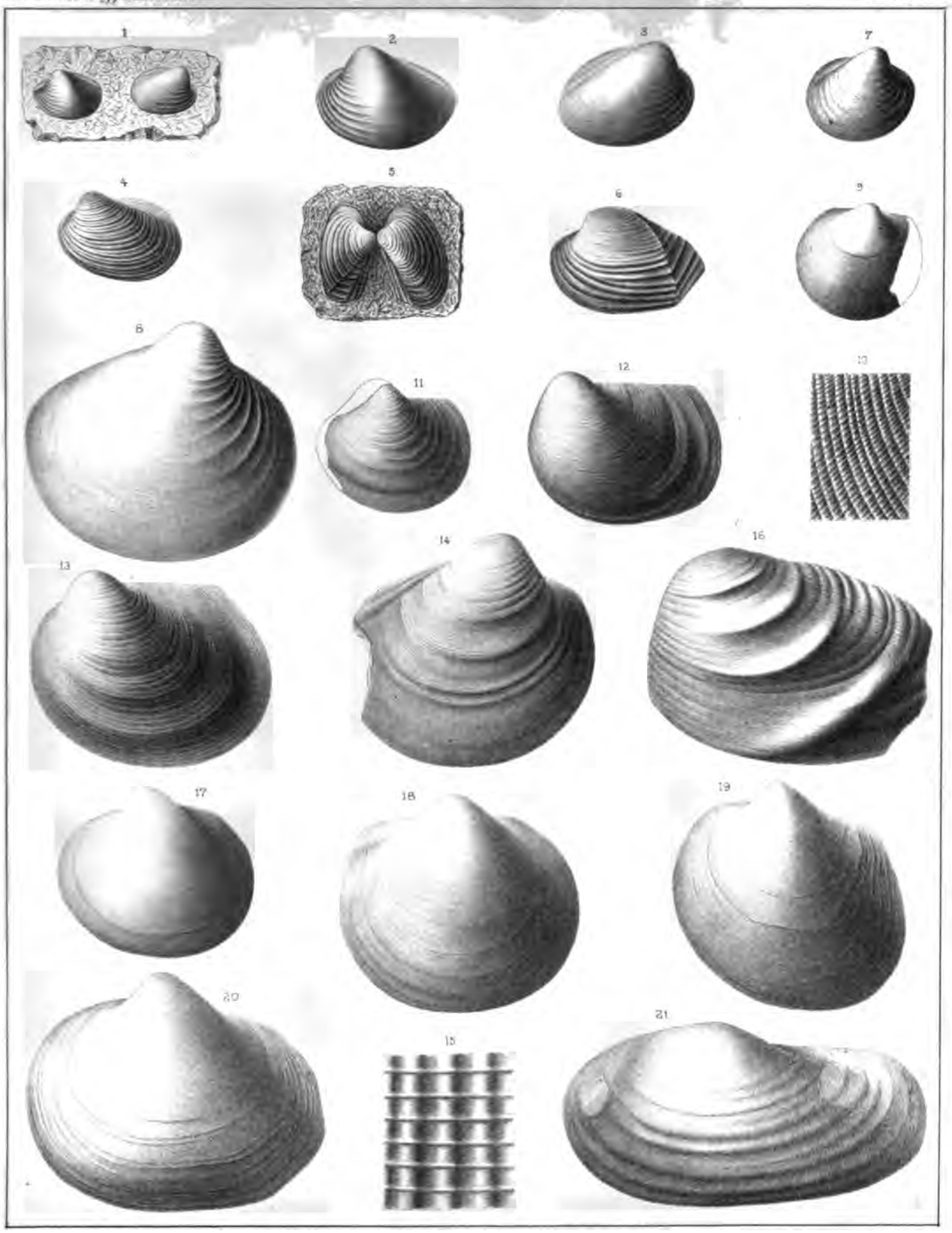
(CARDIOMORPHIDÆ.)



J.H. Emerton del. Kriemann lith.

HAMILTON & CHEMUNG GROUPS.

(CARDIOMORPHIDÆ.)



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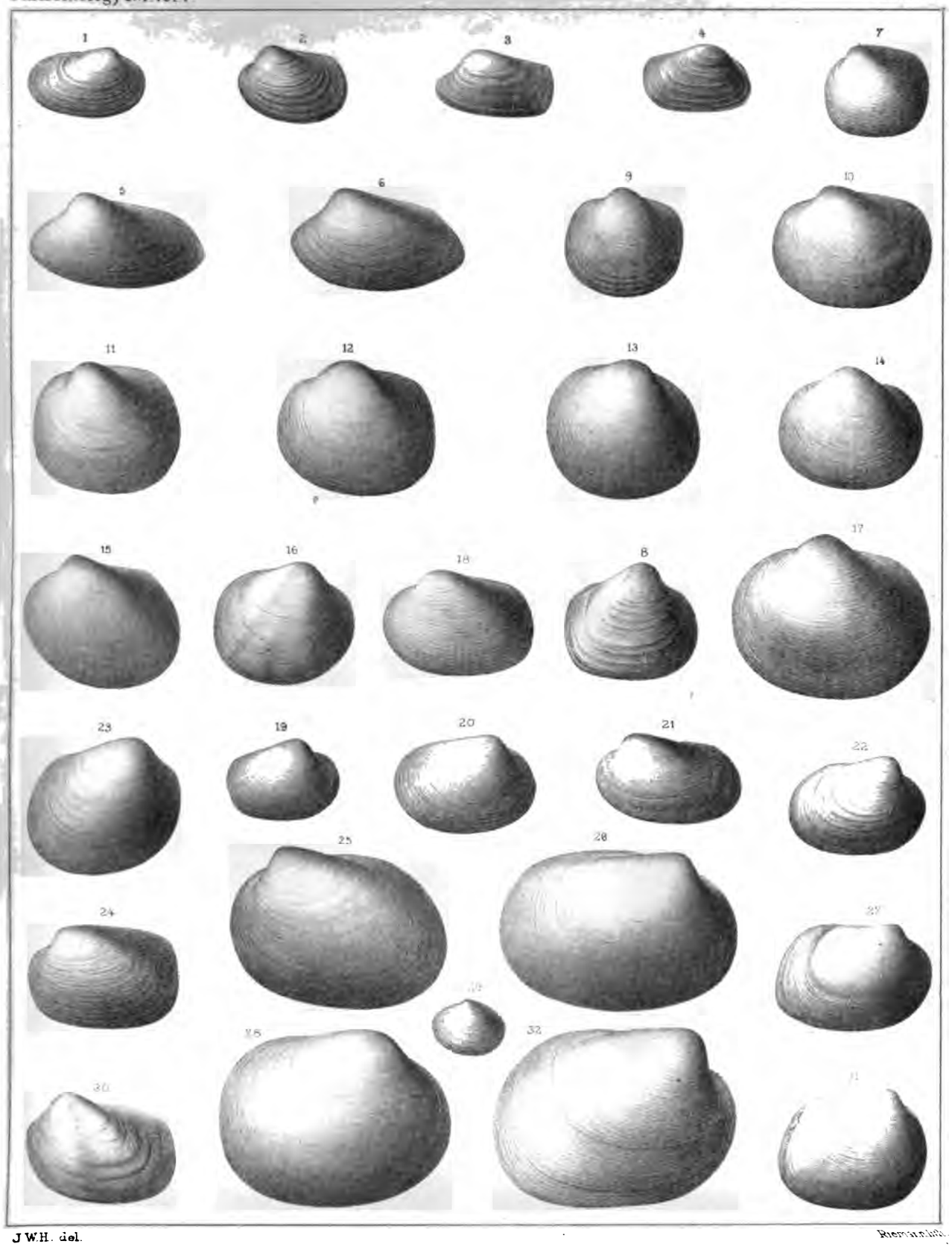
Ryan and Ash

CHEMUNG & WAVERLY GROUPS.

(CARDIOMORPHIDÆ.)

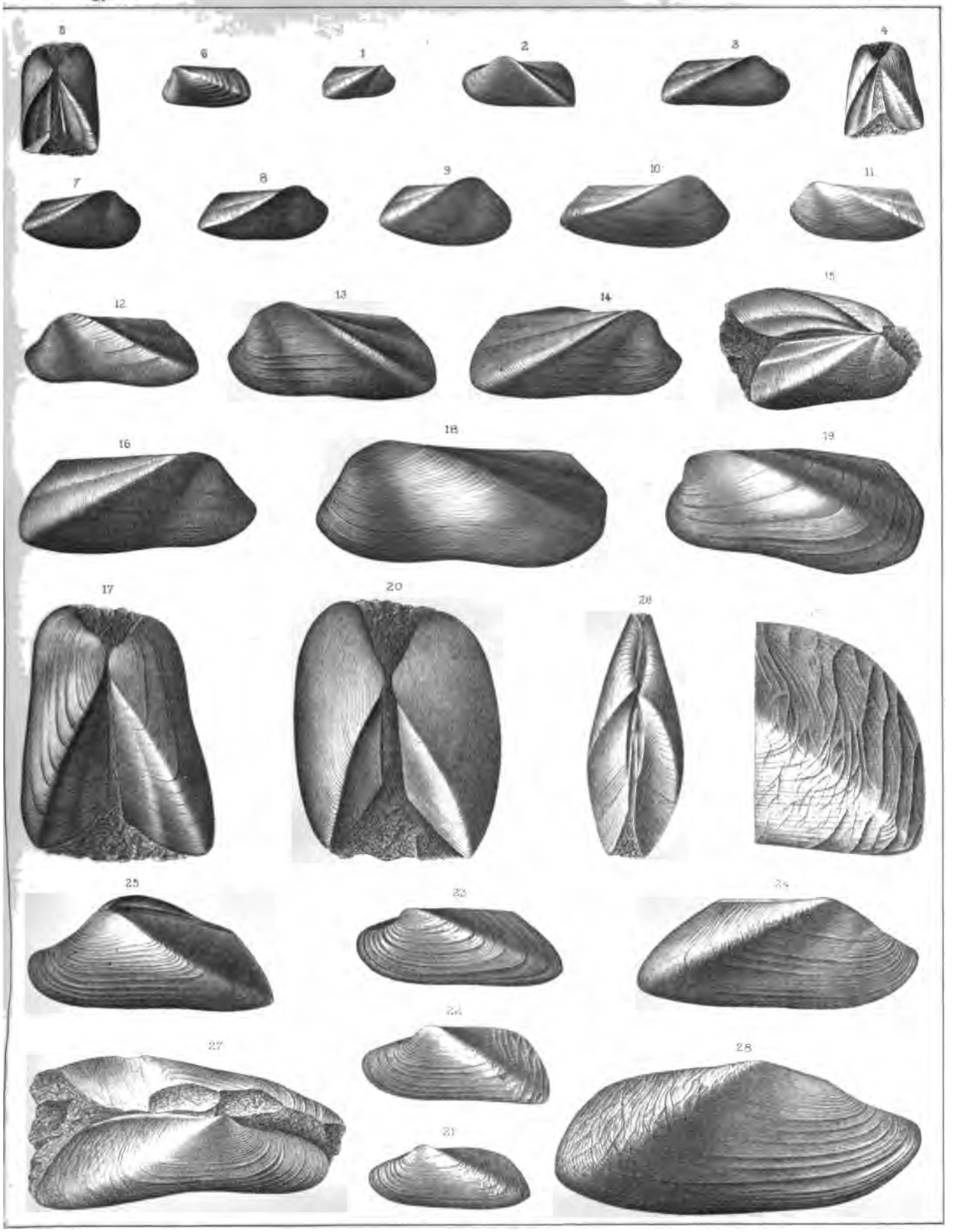


J.W.H. del.

Bierstadt lith.

HAMILTON GROUP.

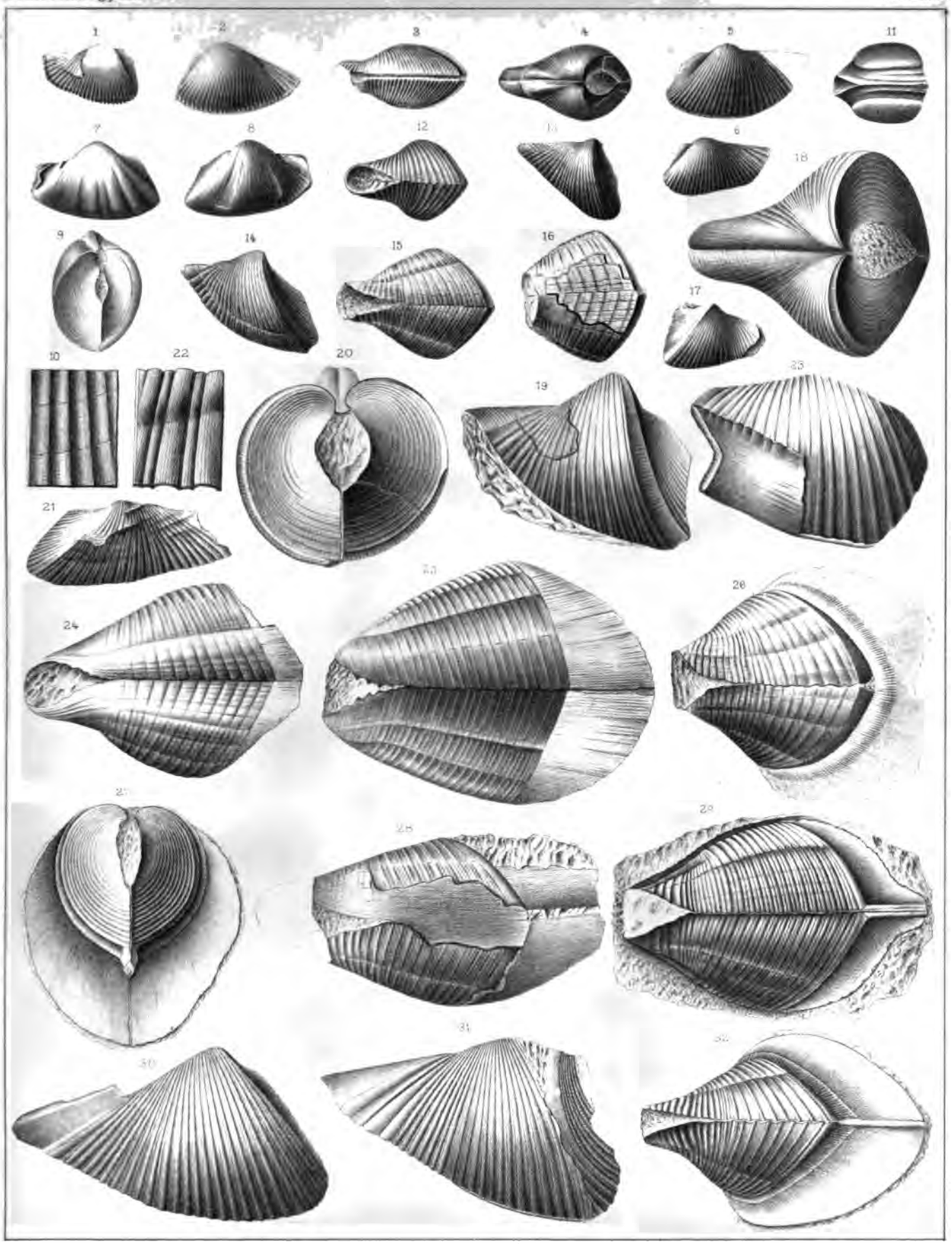
(SANGUINOLITIDÆ.)



G.B. Simpson del.

UPPER HELDERBERG GROUP.

(CARDIIDÆ.)

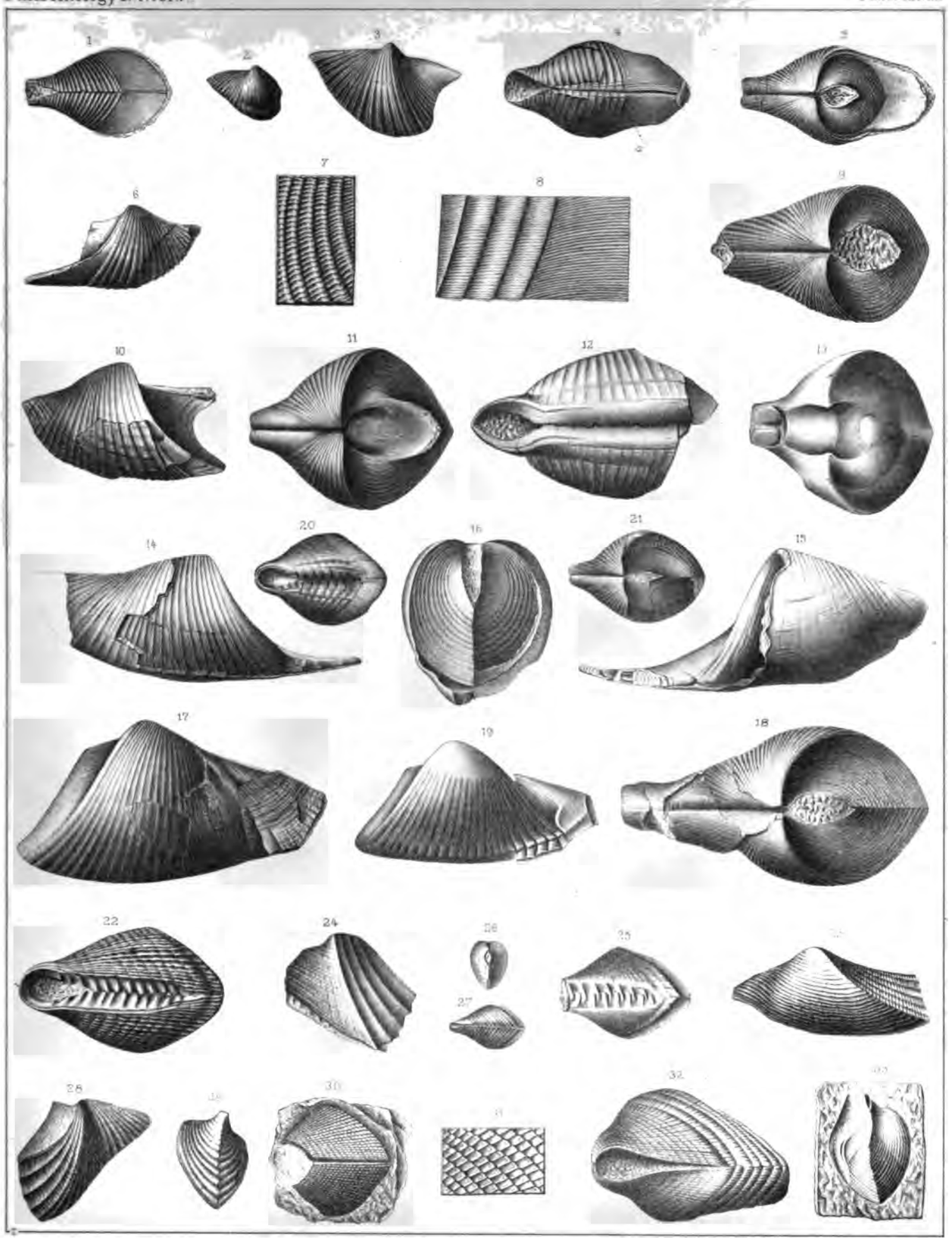


C. E. Sprague, del.

Phototypeinth.

UPPER HELDERBERG HAMILTON & CHEMUNG GROUPS.

(CARDIIDÆ.)



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Phototypeing.

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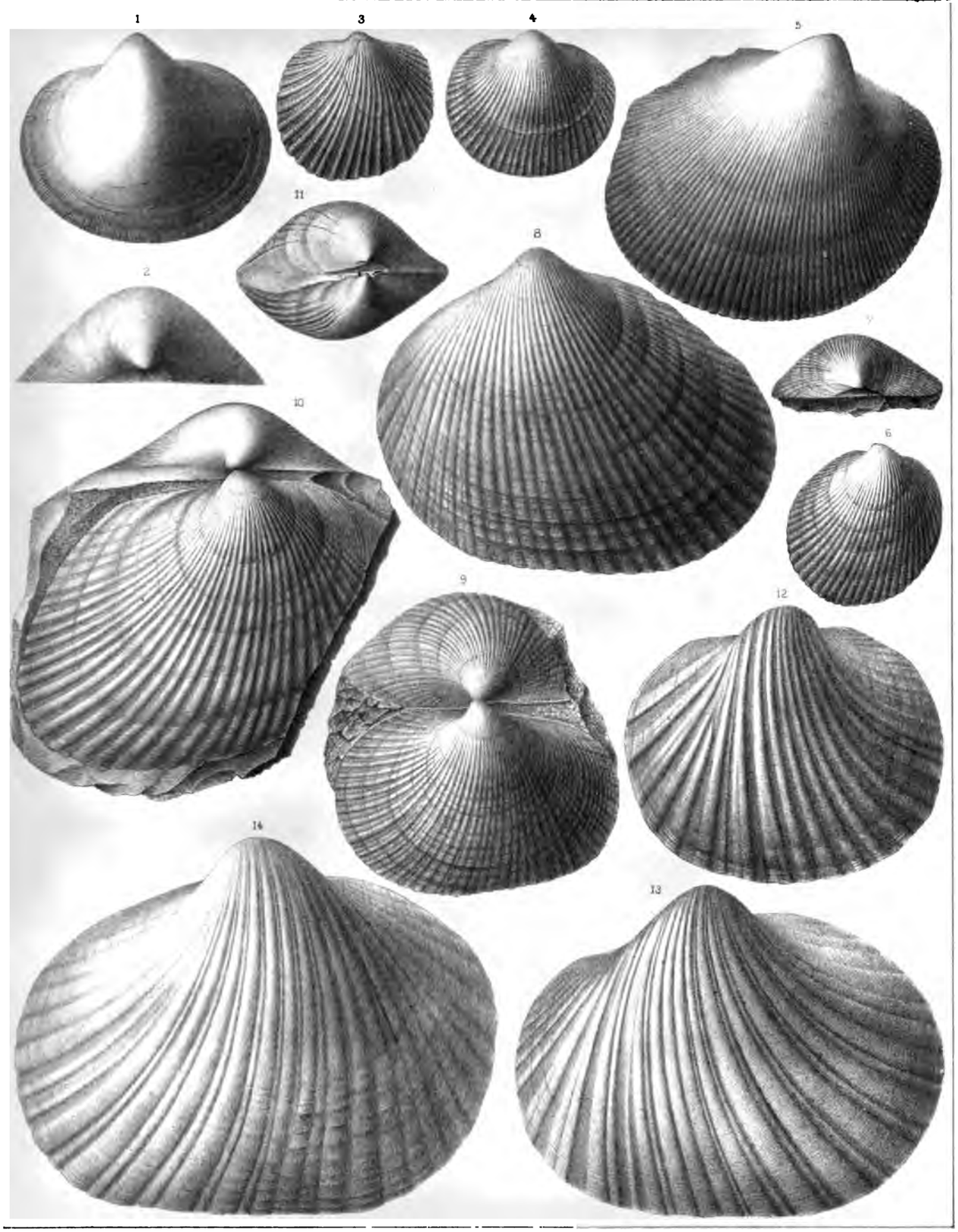
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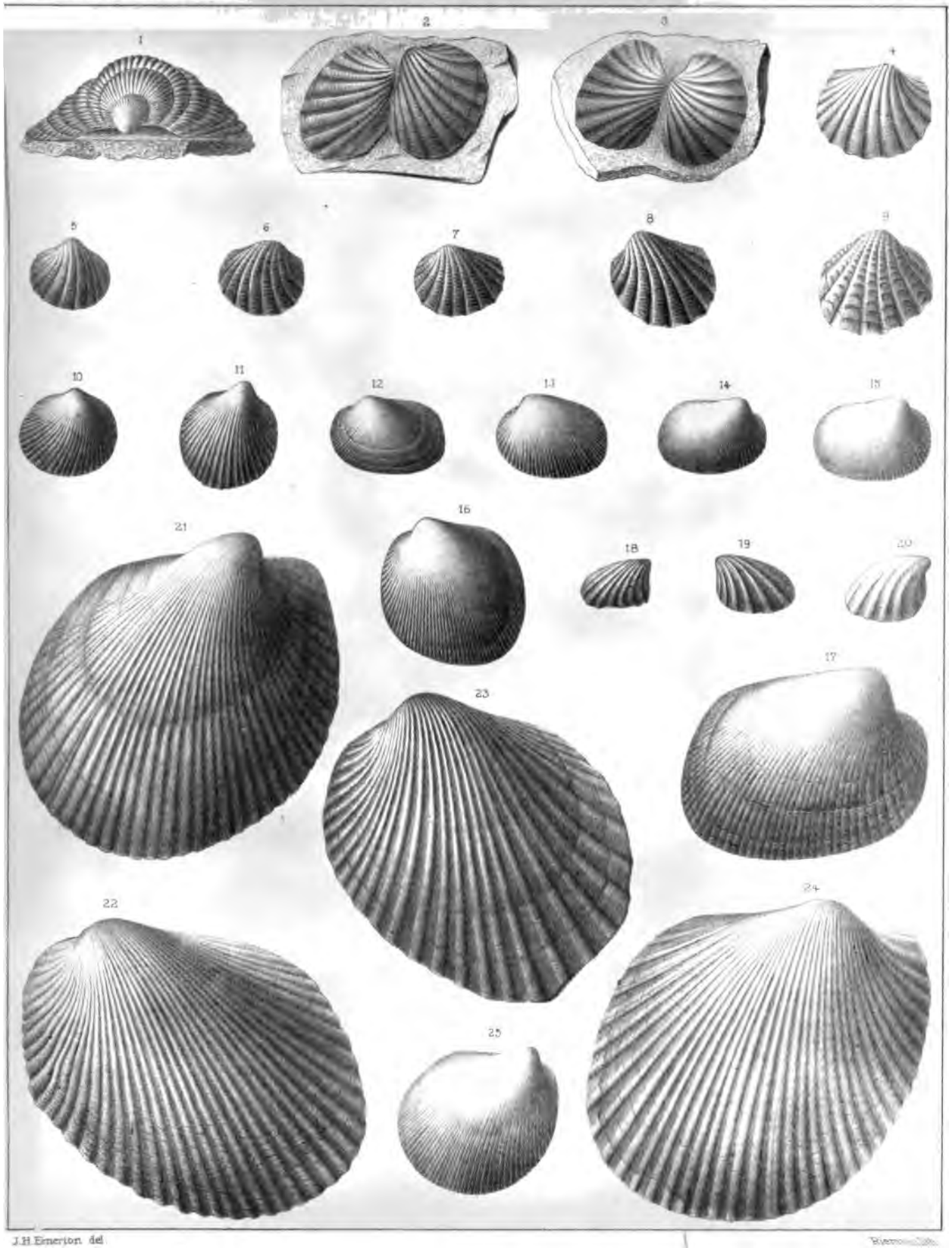
UPPER HELDERBERG HAMILTON & CHEMUNG GROUPS.

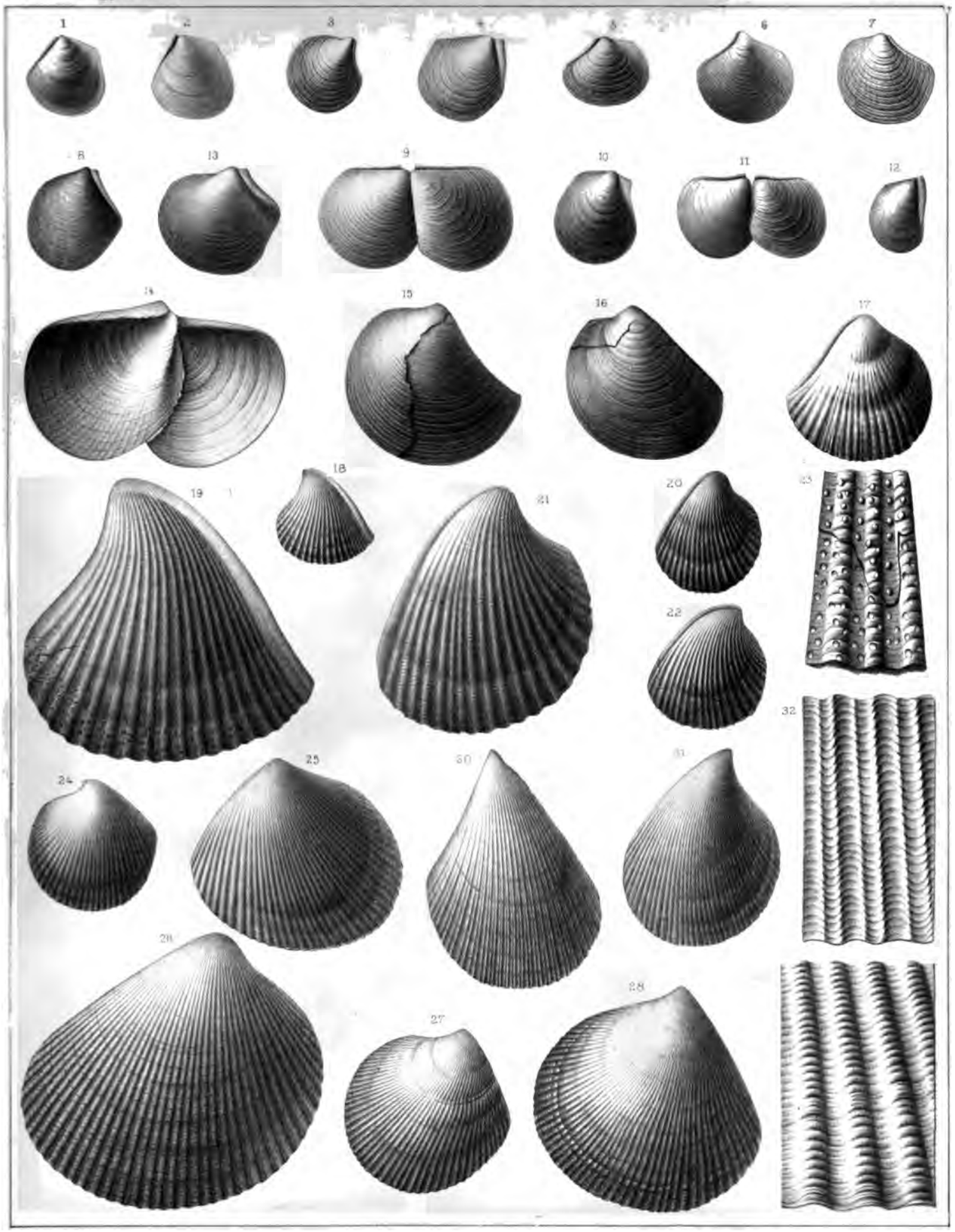
(CARDIIDÆ.)



J.H. Emerton del.

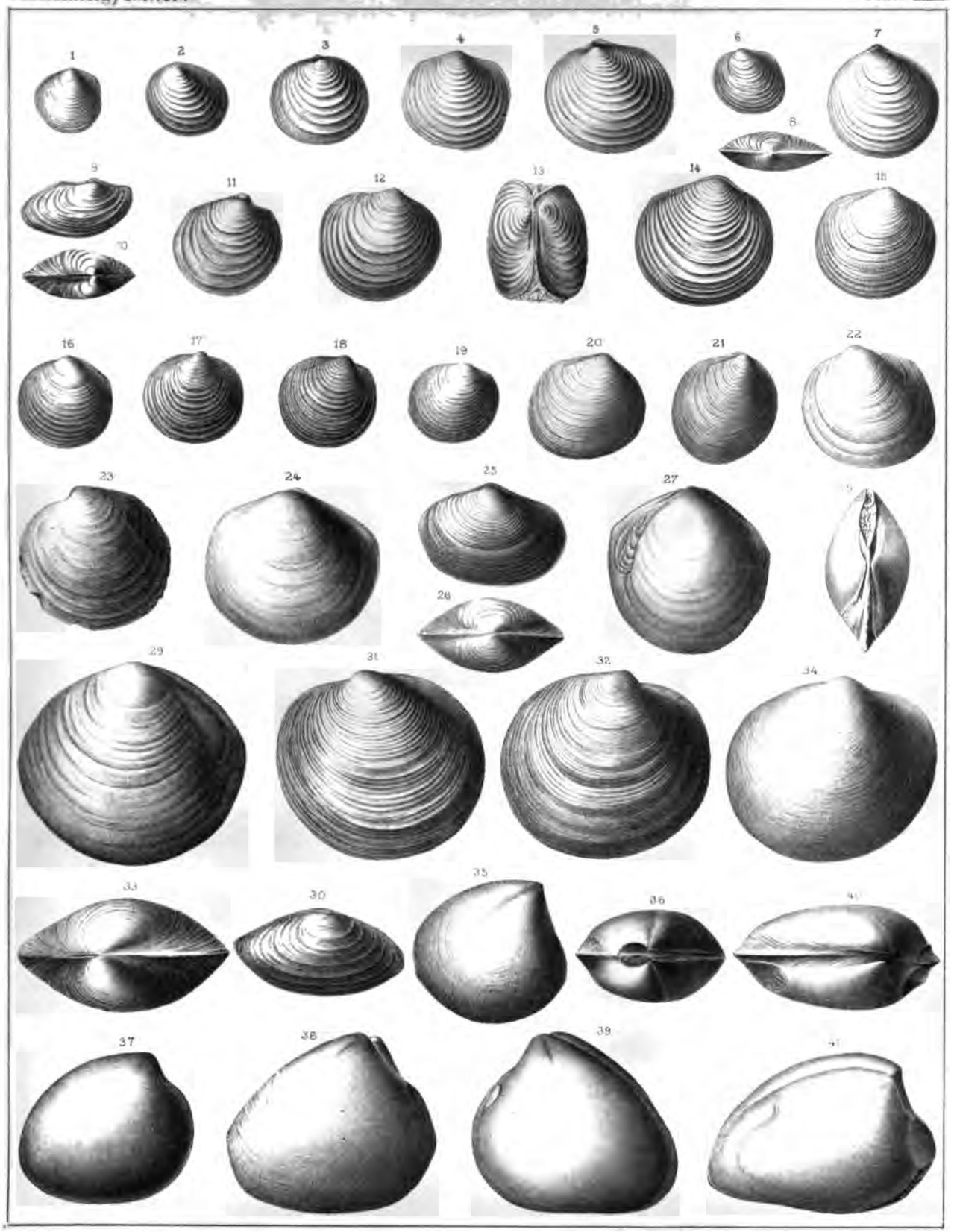
HAMILTON PORTAGE & CHEMUNG GROUPS.

(CARDIIDÆ.)



J.H. Emerton del.

Pict. Asylum lith.

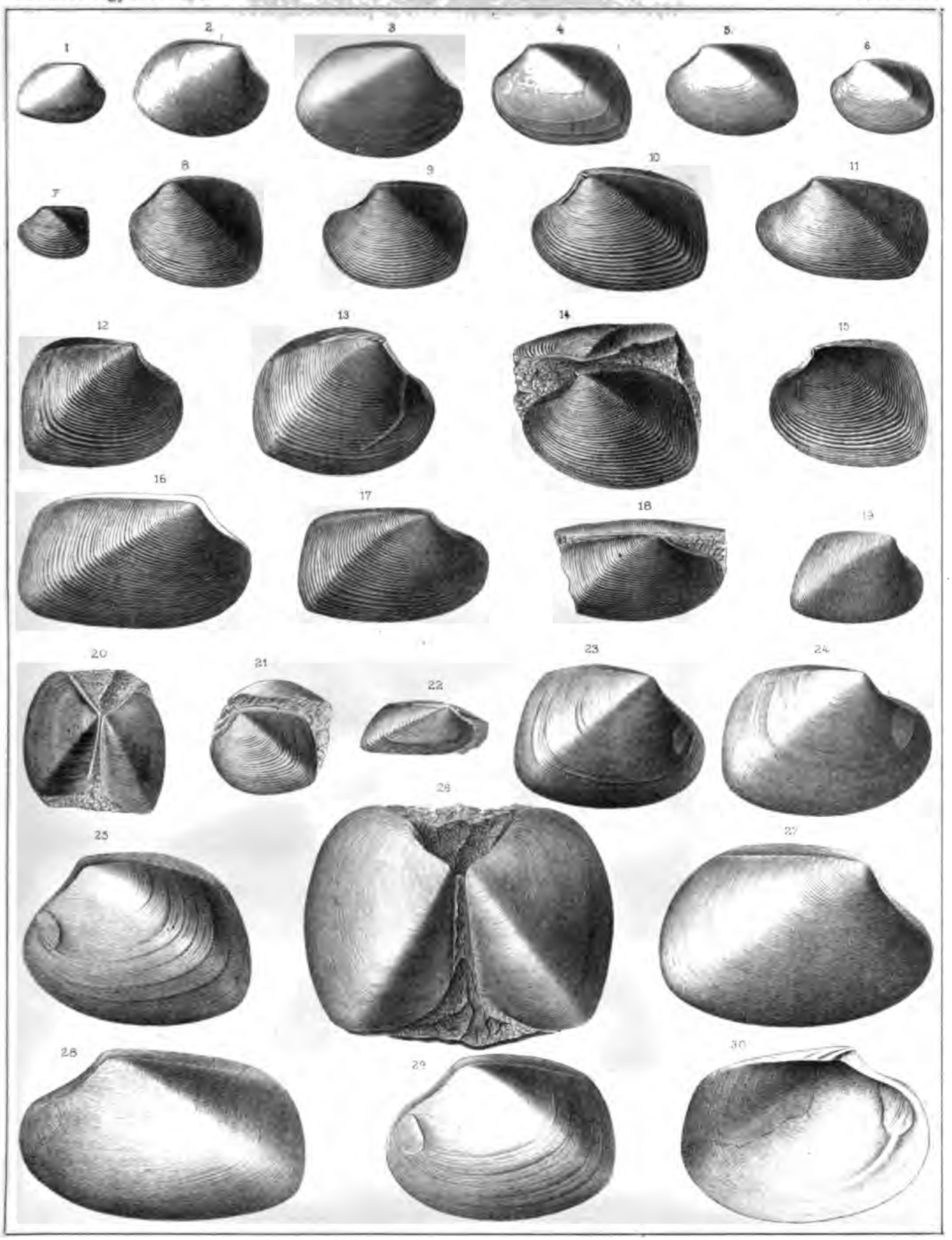


J.W.H. del.

Riemann lith.

HAMILTON GROUP.

(ASTARTIDÆ.)

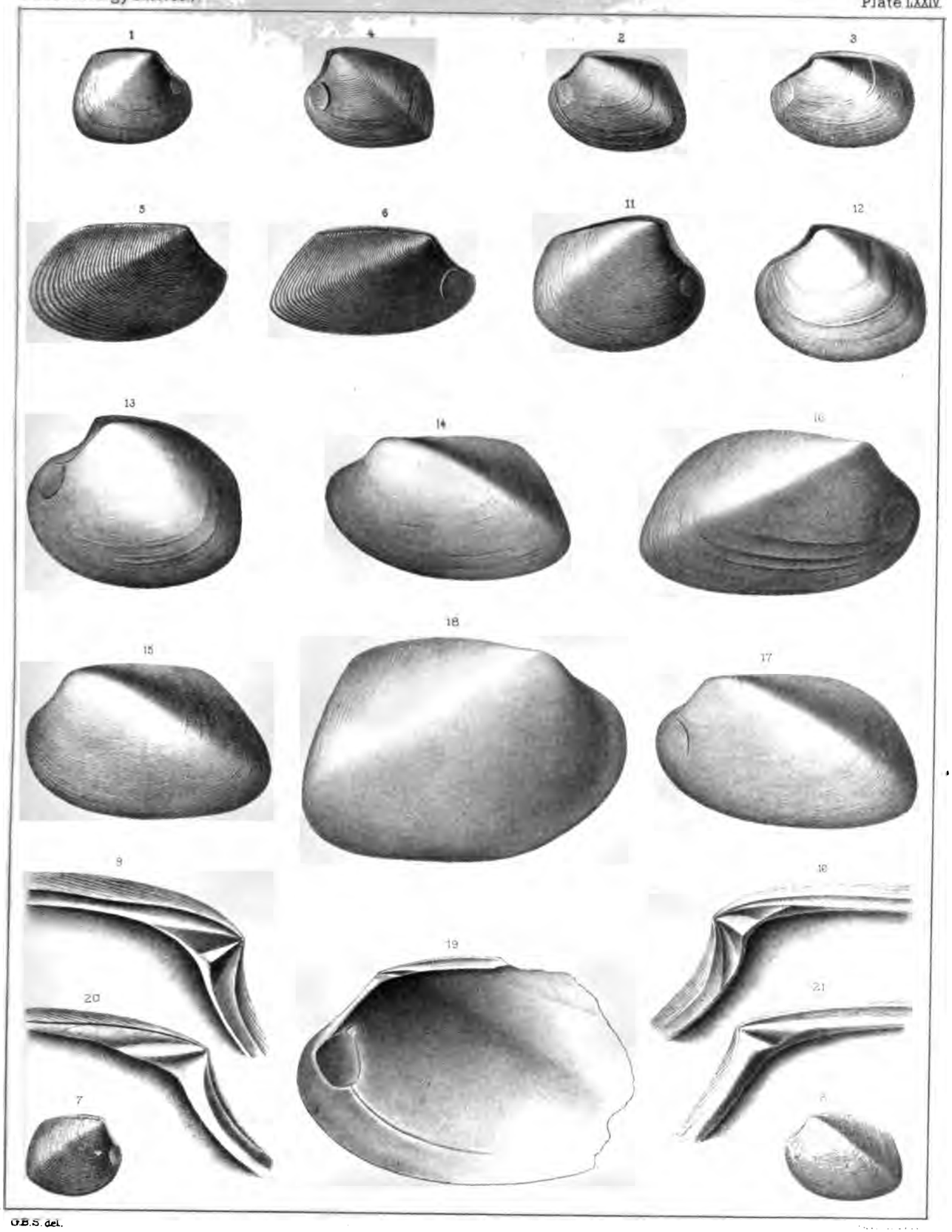


G.B. Simpson del.

Riemann lith.

HAMILTON CHEMUNG & WAVERLY GROUPS.

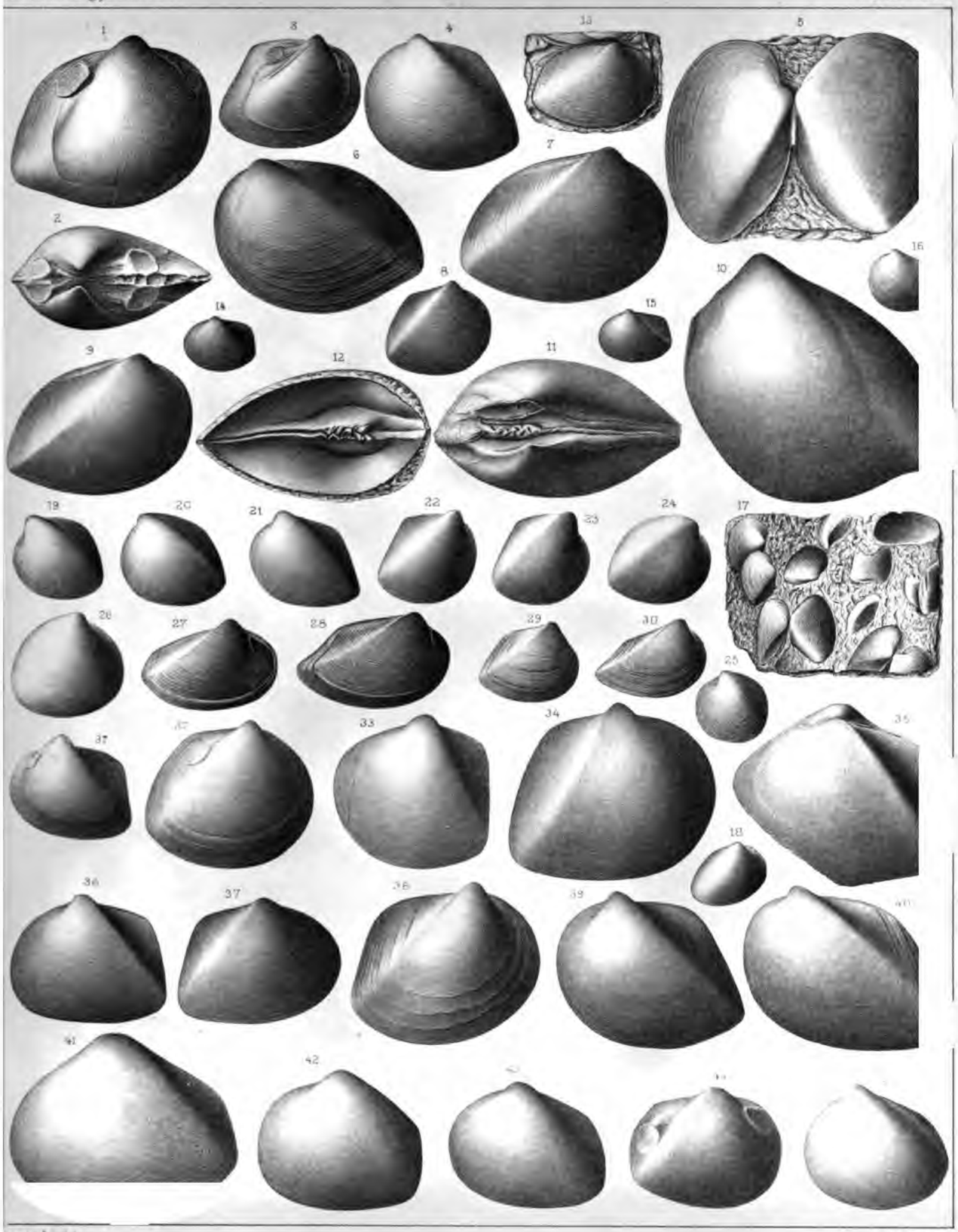
(ASTARTIDÆ.)



O.B.S. del.

UPPER HELDERBERG TO WAVERLY GROUP.

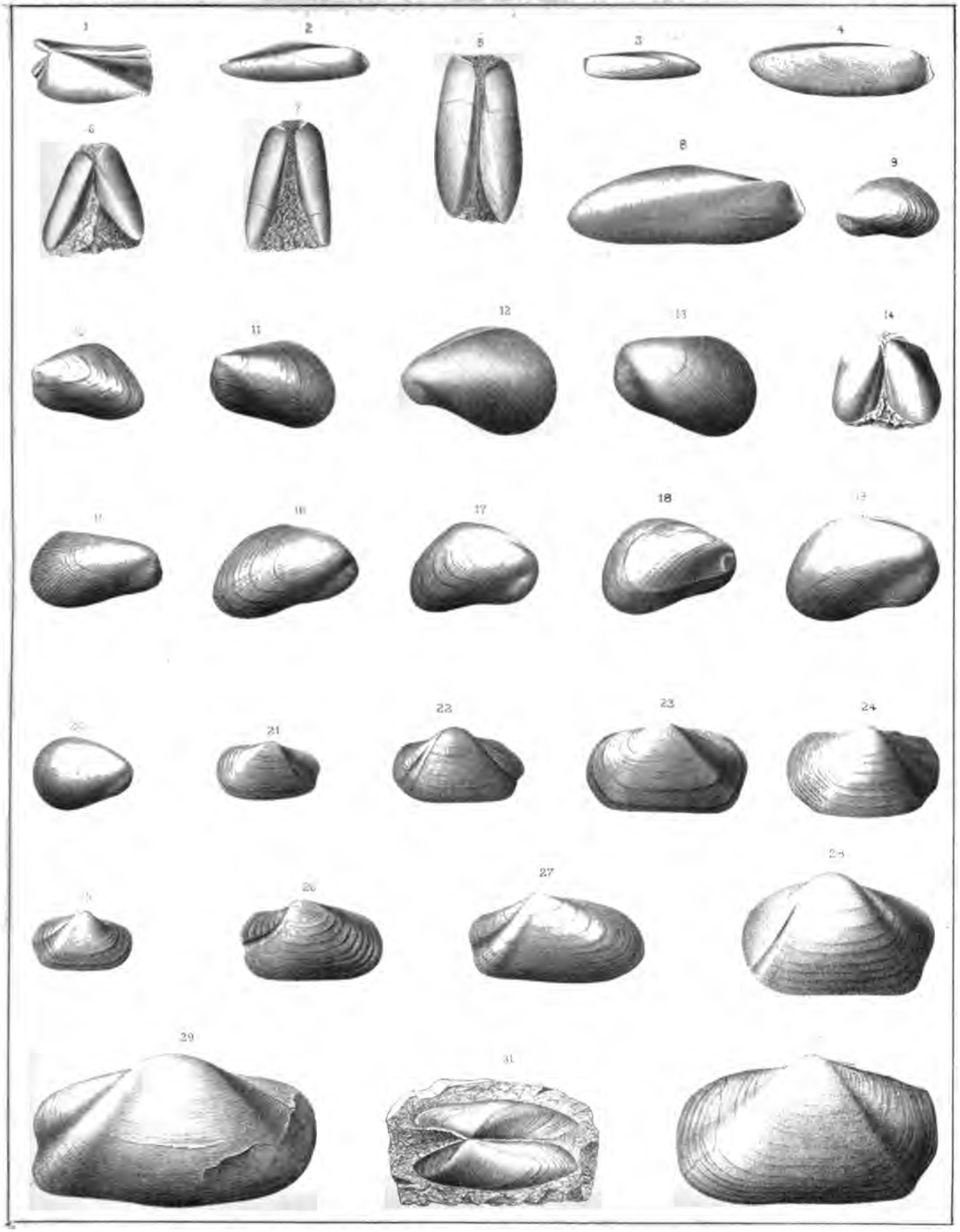
(CYTHERODONTIDÆ.)



J.W. Hall del. Ph. Lange sc.

HAMILTON GROUP.

(FAMILIES UNDET.)



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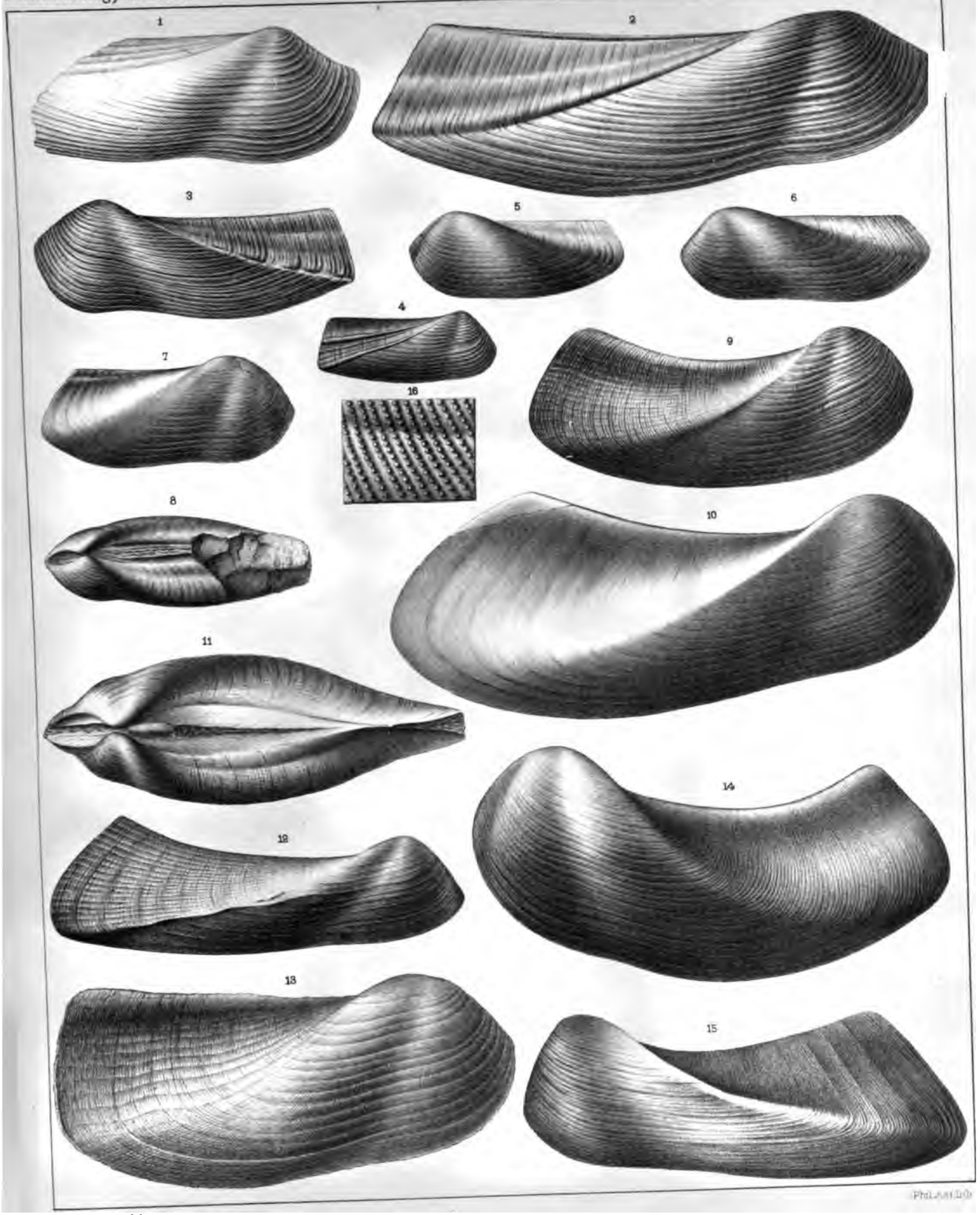
HAMILTON & CHEMUNG GROUPS.

(PHOLADELLIDÆ.)

Palæontology N.Y. Vol. V.

Plate LXXVII.



Phil. Sc. Lith.

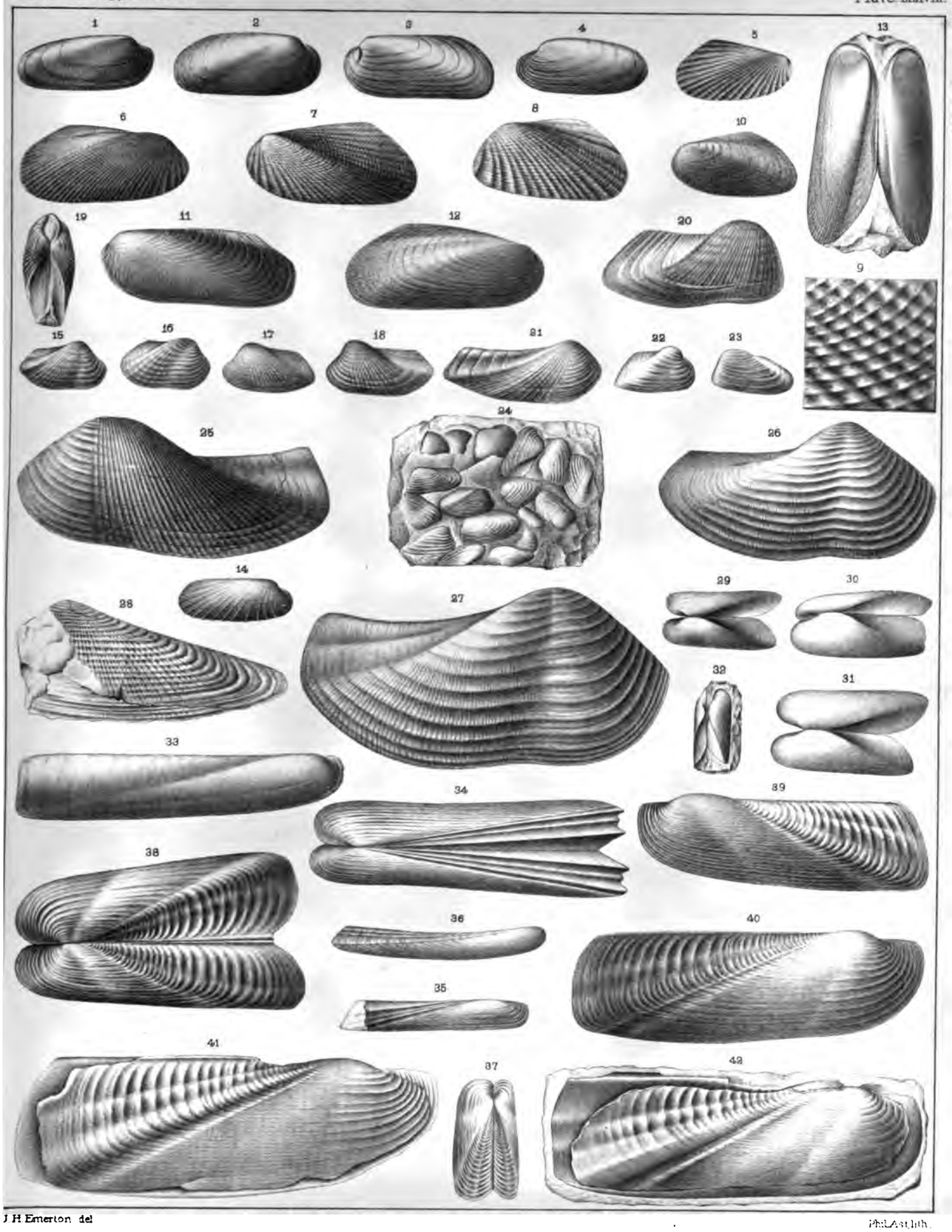
J.H. Emerton del

HAMILTON & WAVERLY GROUPS.

(PHOLADELLIDÆ.)
(ORTHONOTIDÆ *etc.*)

Palæontology N.Y. Vol. V.

Plate. LXXVIII.

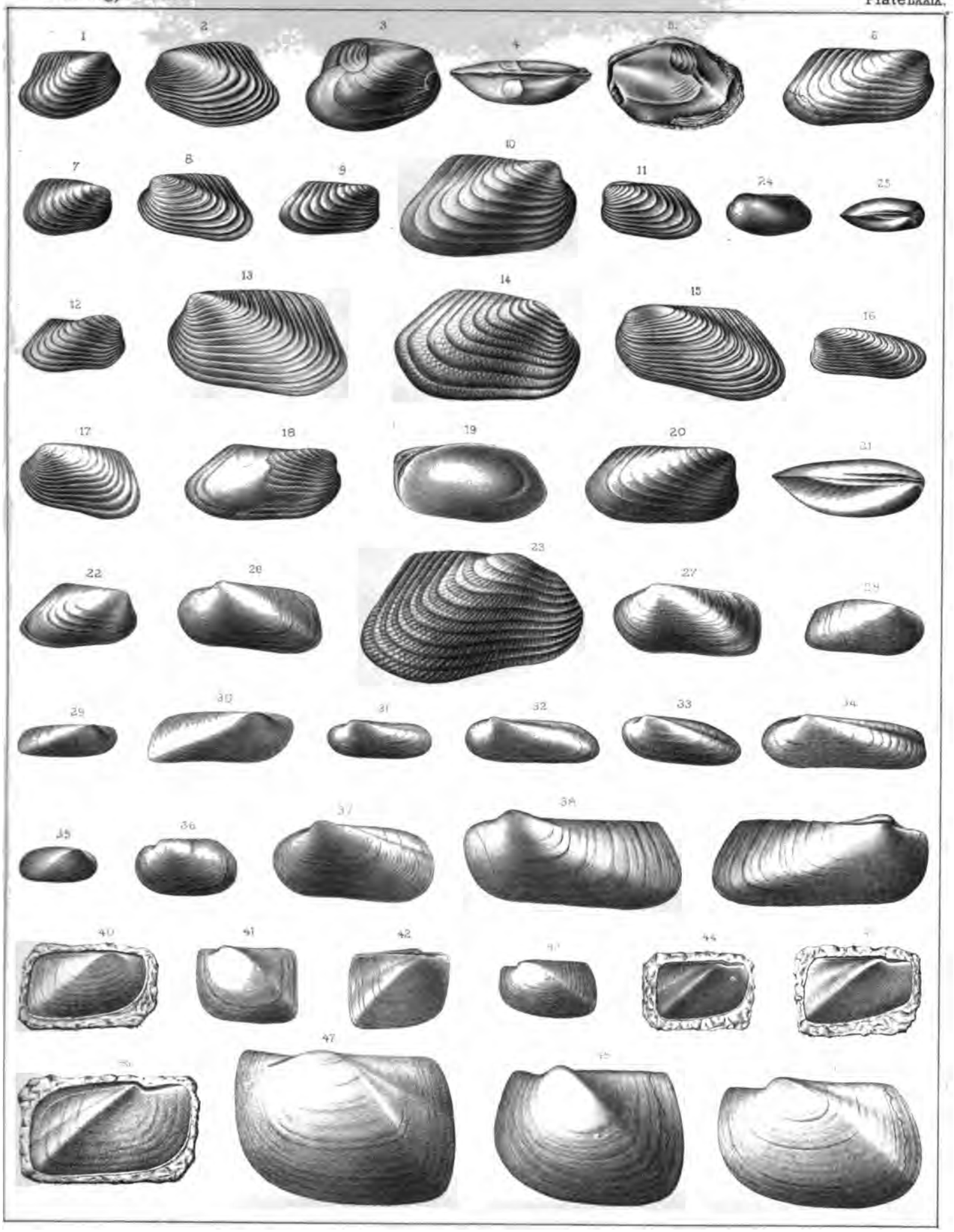


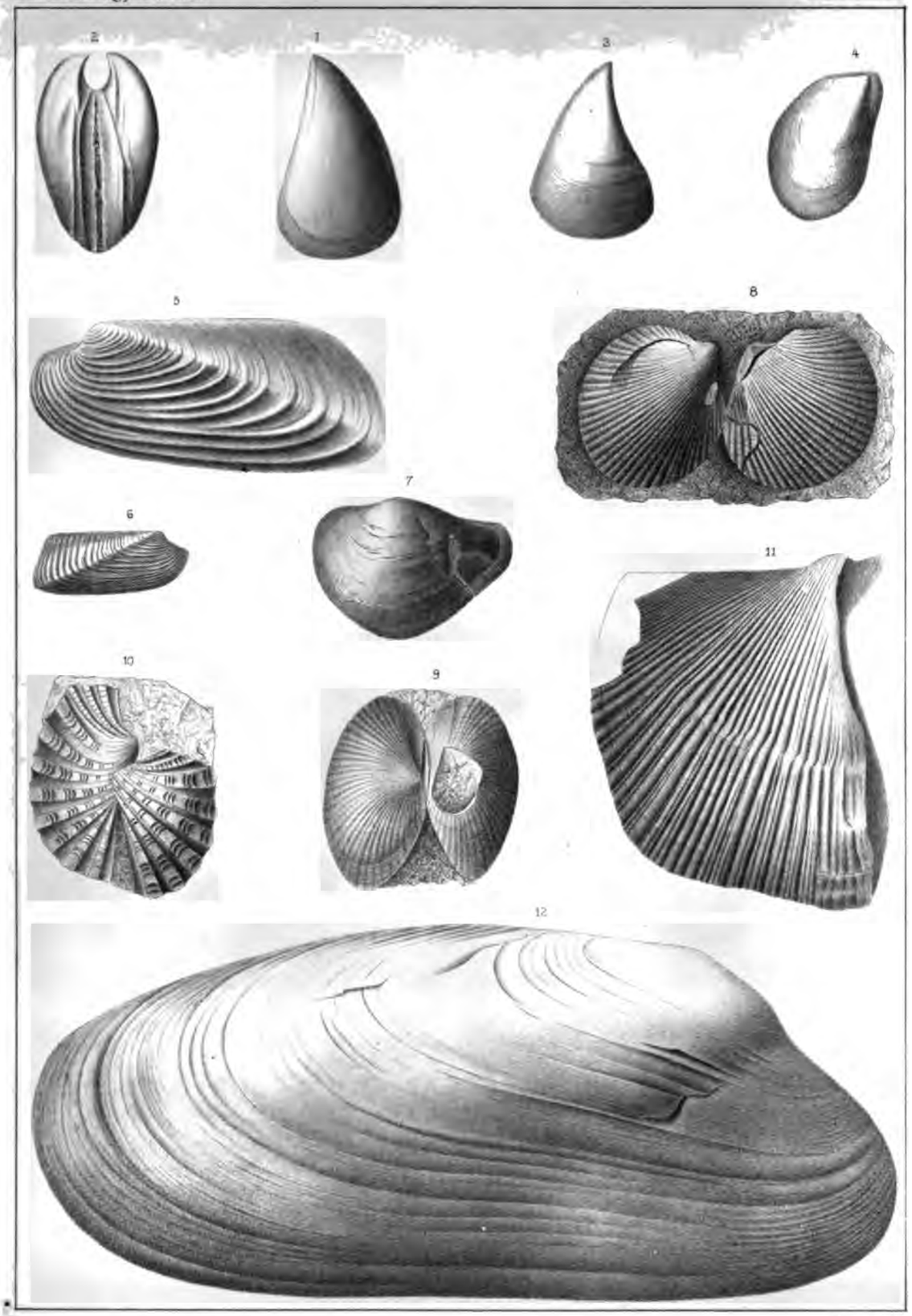
J. H. Emerton del.

Ph. L. Ast lith.

UPPER HELDERBERG TO WAVERLY GROUP.

(FAMILY ? & PALANATINIDÆ.)





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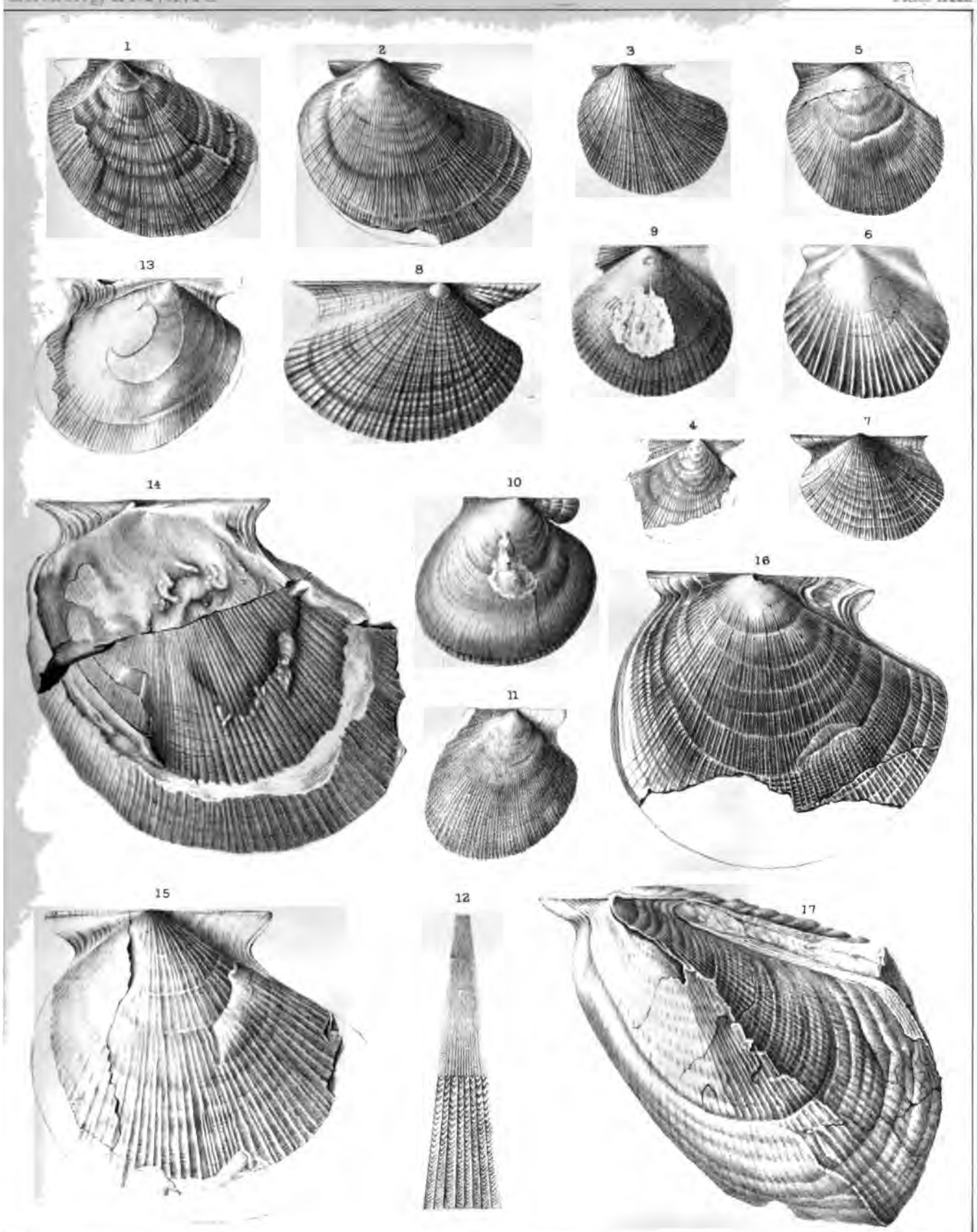

nons, del

Chas Van Benthuysen & Sons, lith

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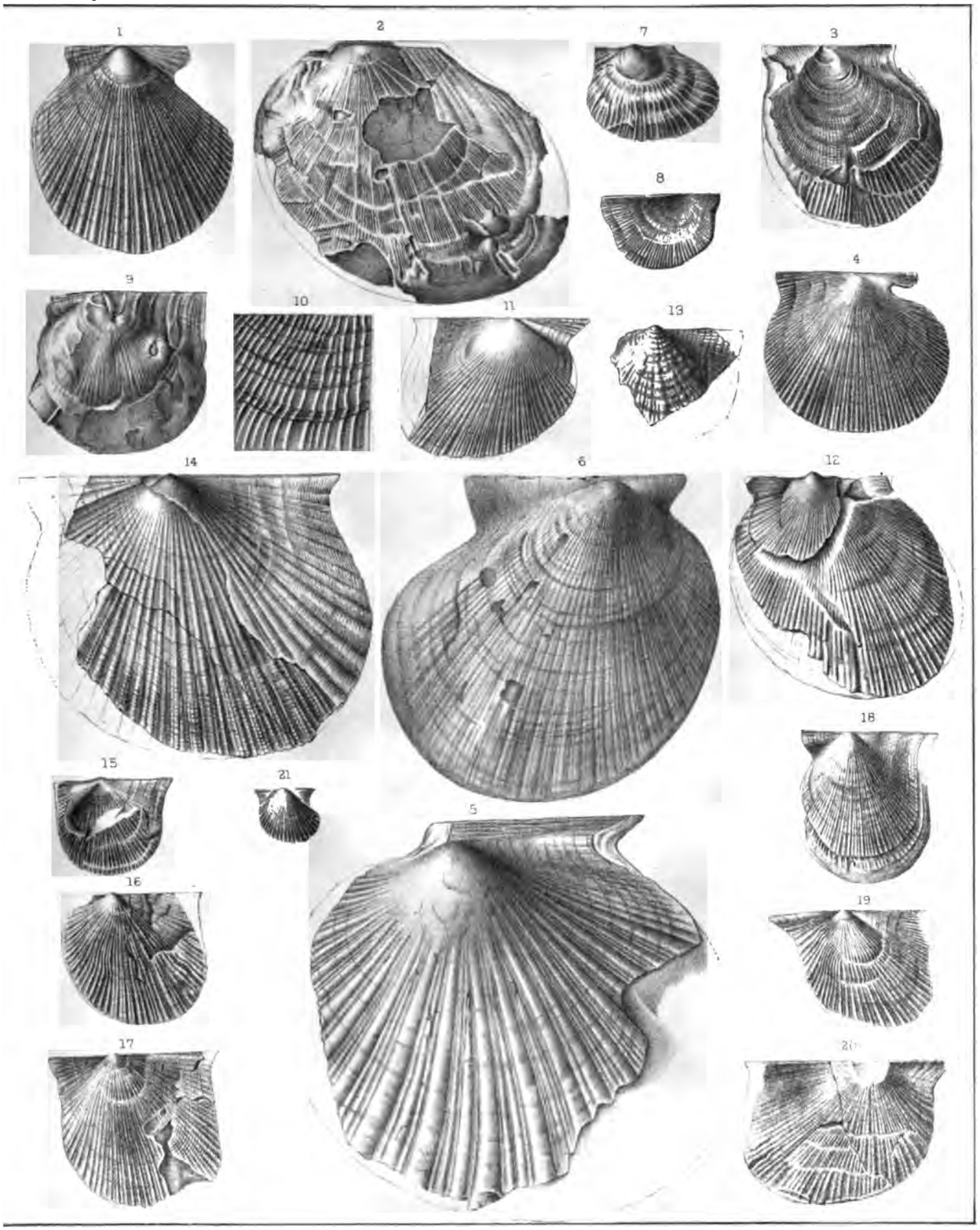
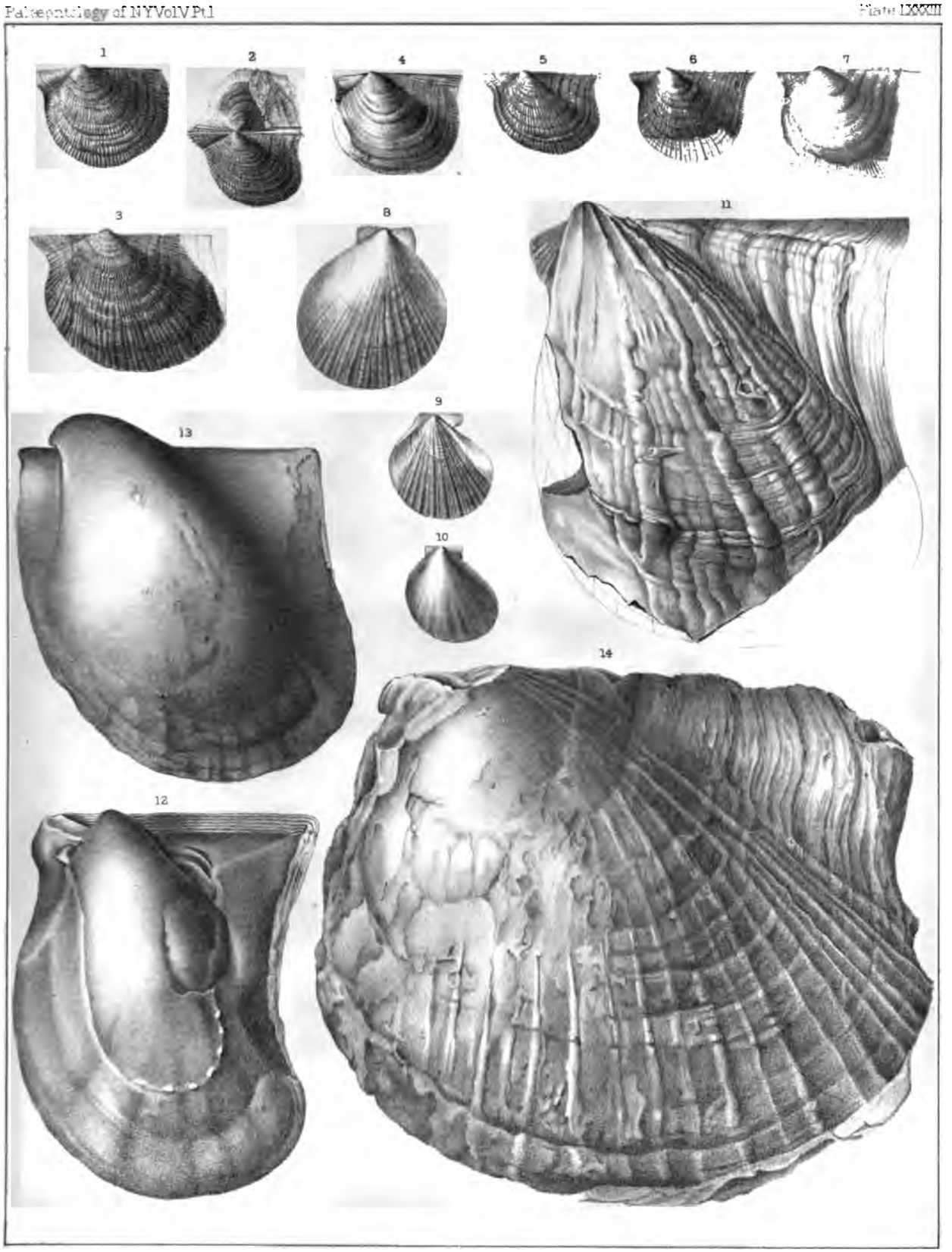
UPPER HELDERBERG TO CHEMUNG GROUP.



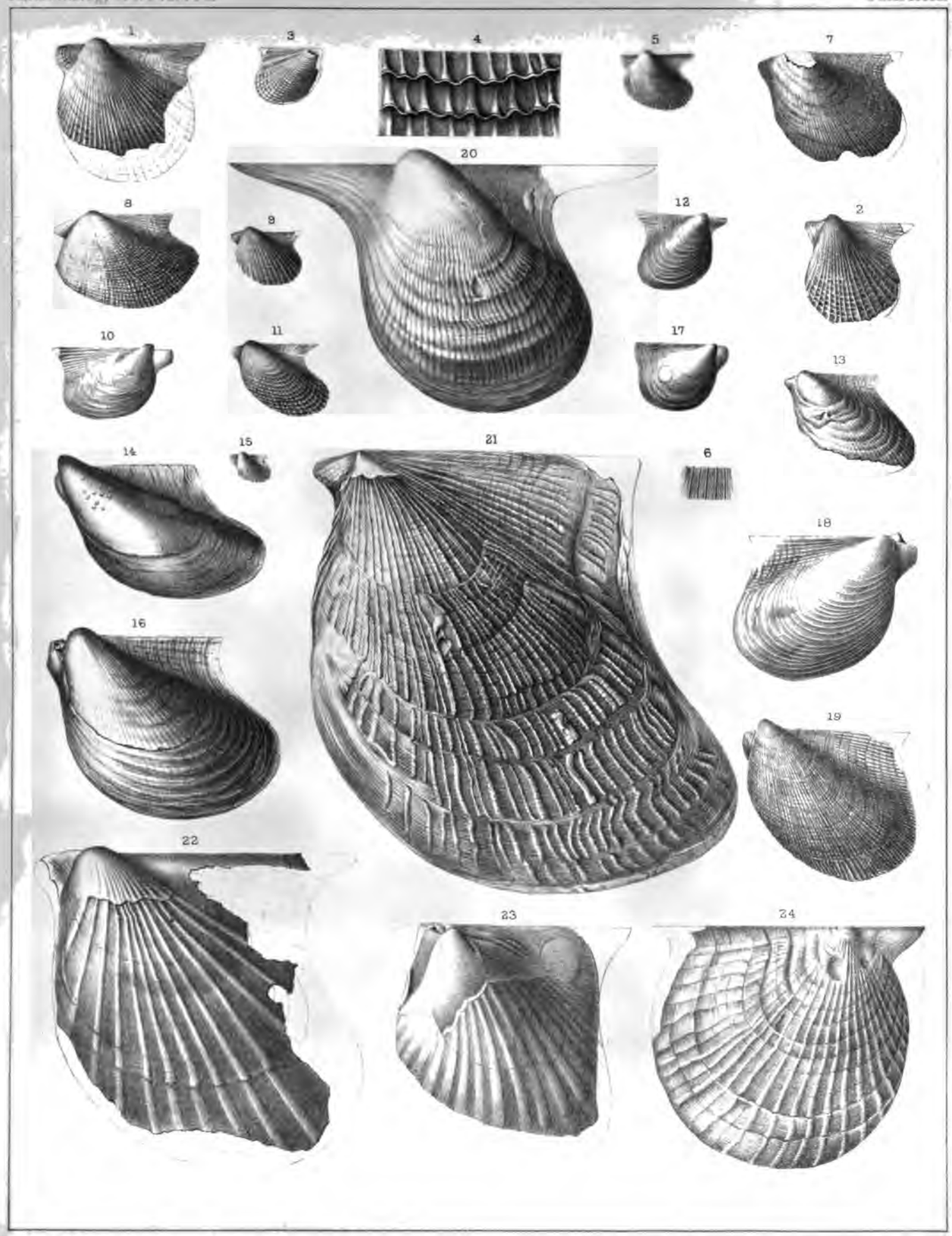
UPPER HELDERBERG TO CHEMUNG GROUPS.



G. B. Simpson sc.

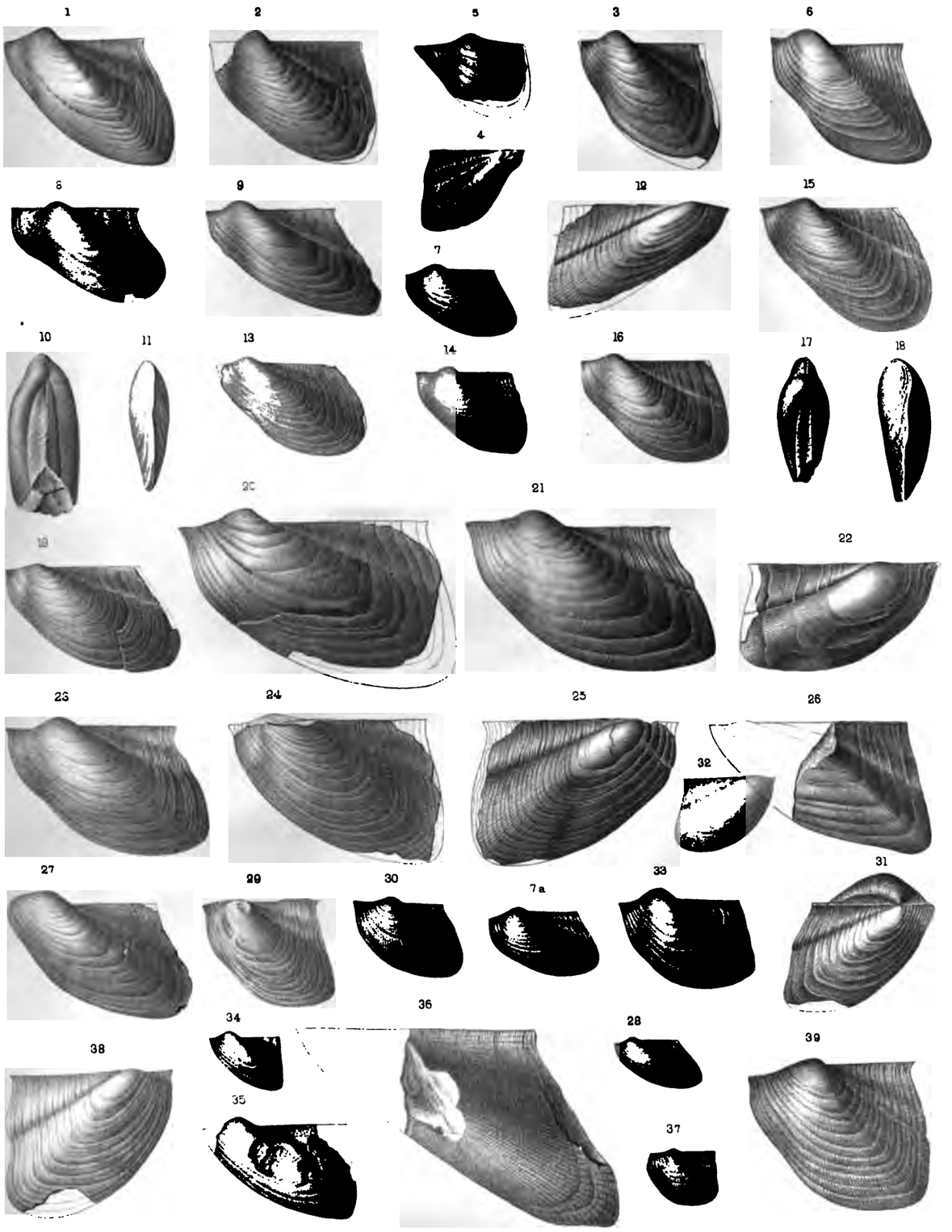
Chas. Schlenbach Albany N.Y.

HAMILTON AND CHEMUNG GROUPS.



Emmons, del.

Chas. Van Benthuysen & Sons lith.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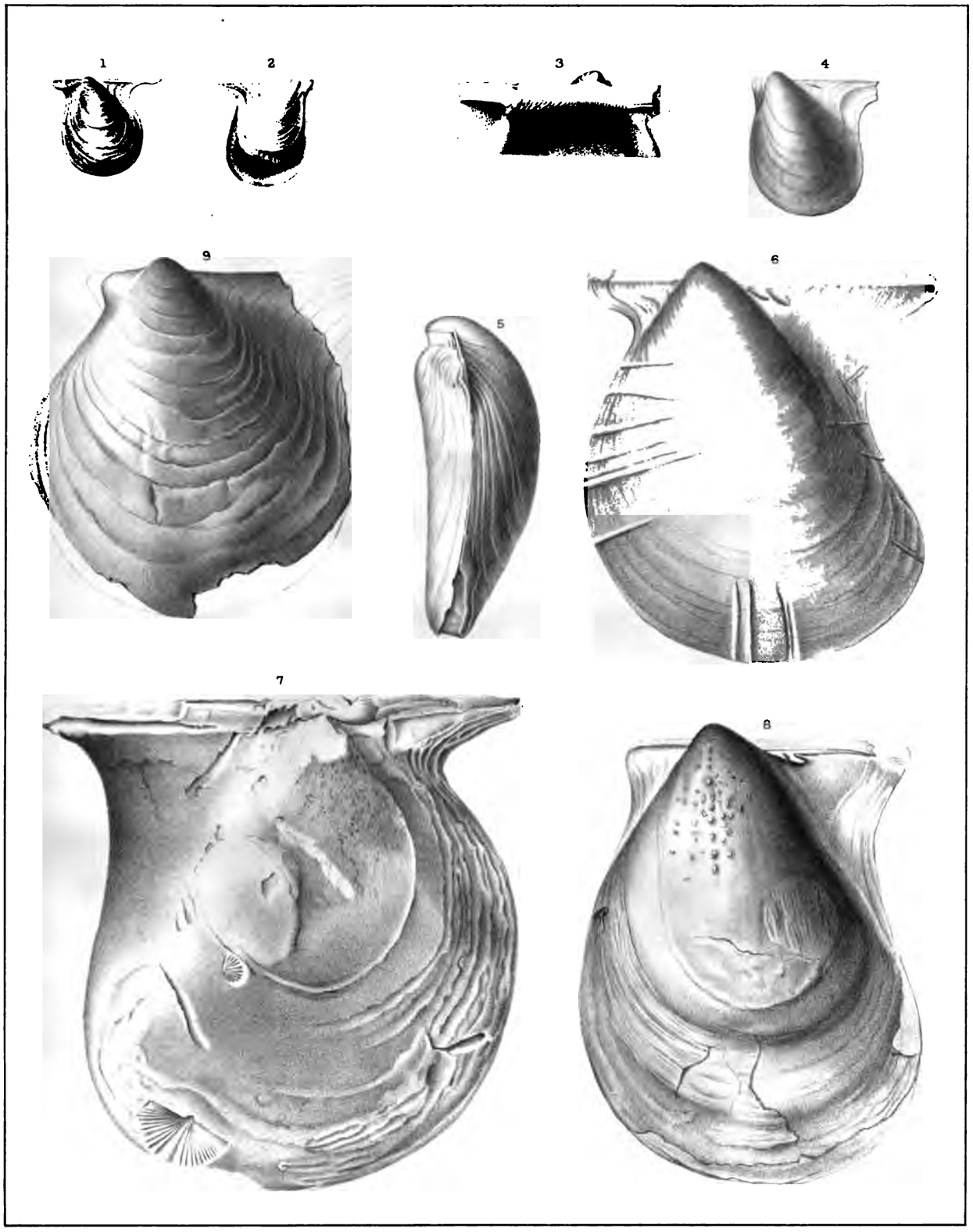
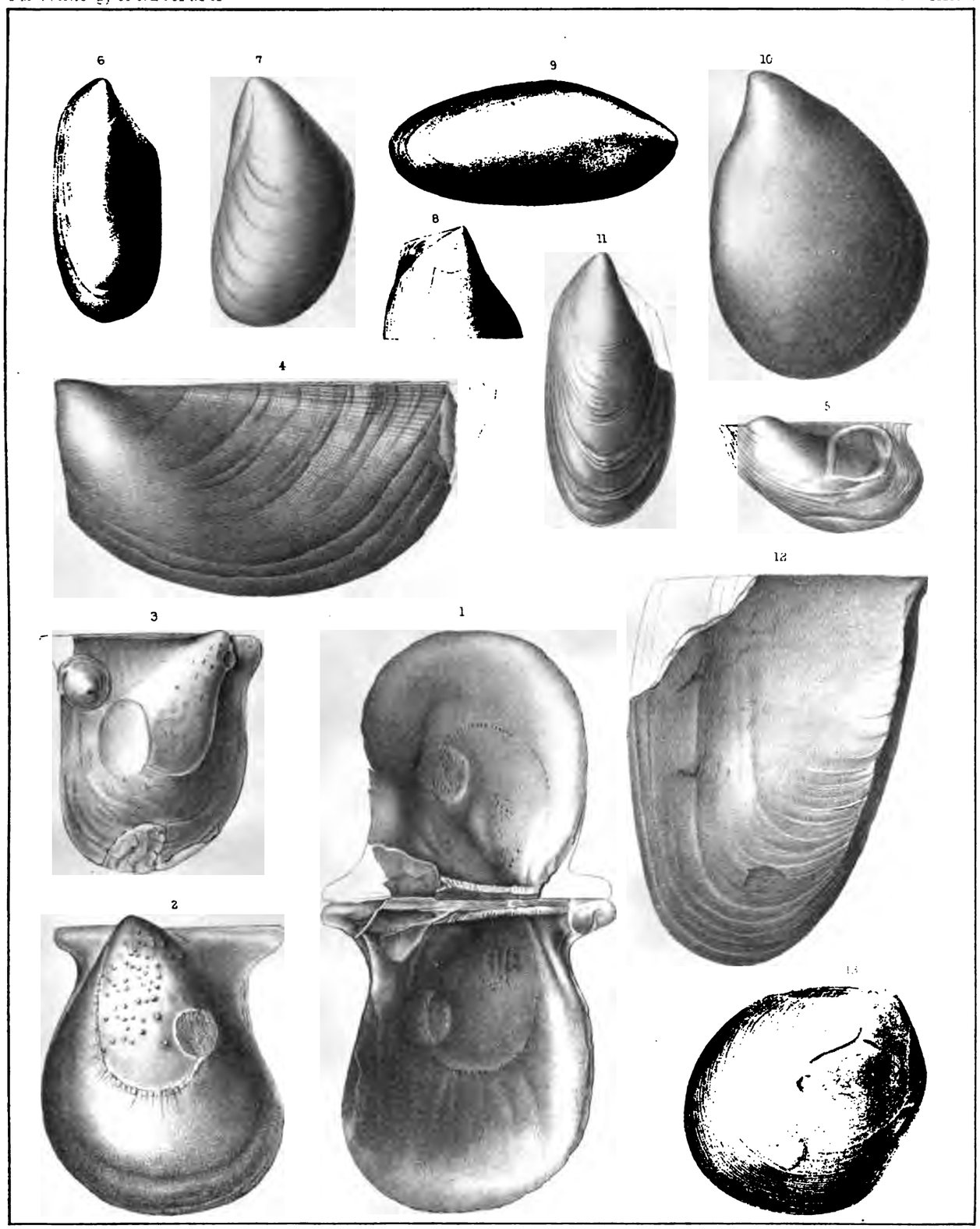
HAMILTON GROUP.



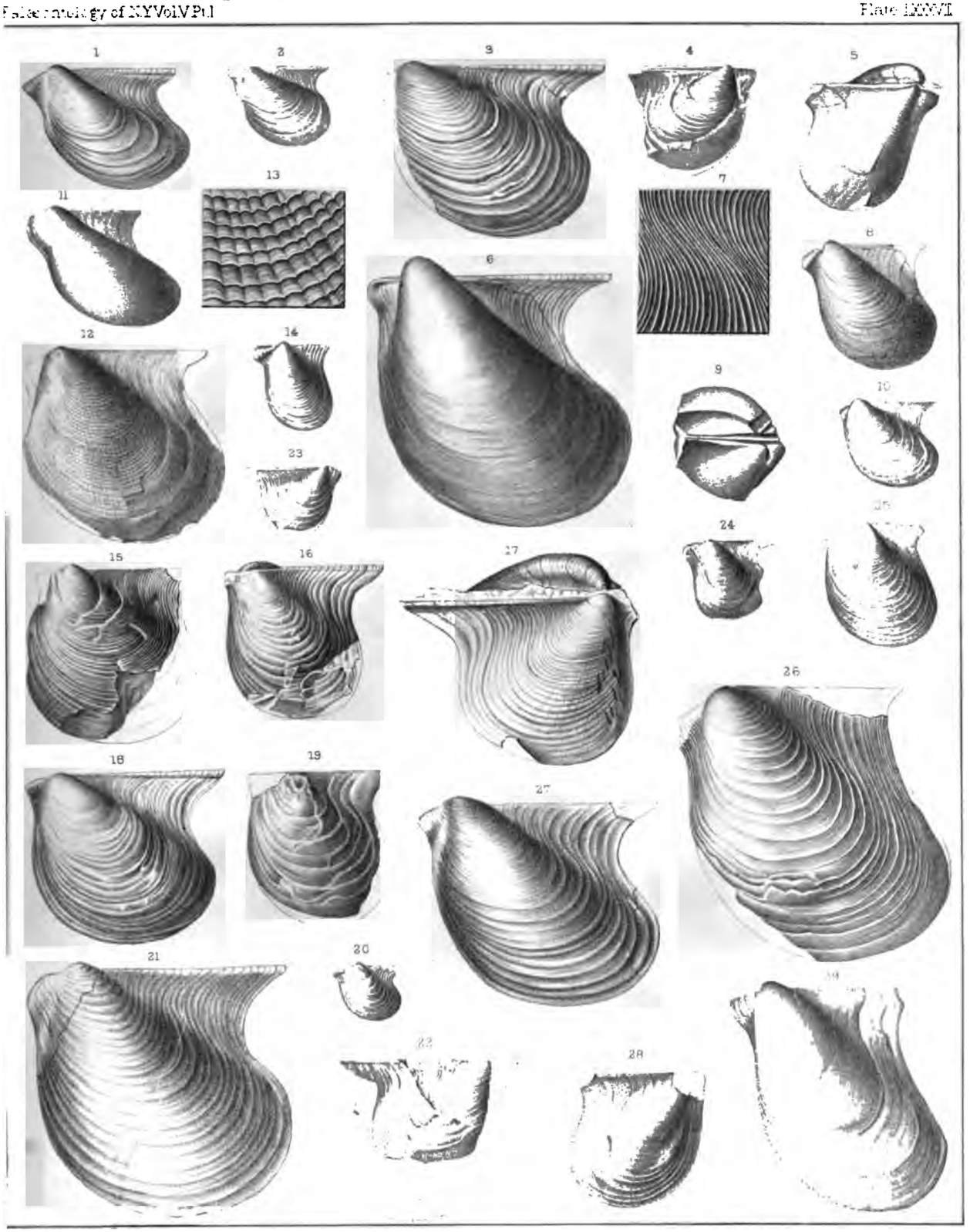
C. E. Beecher del.

Chas. Van Benthuysen & Sons lith.

ORISKANY SANDSTONE TO CHEMUNG GROUP.



HAMILTON AND CHEMUNG GROUPS.



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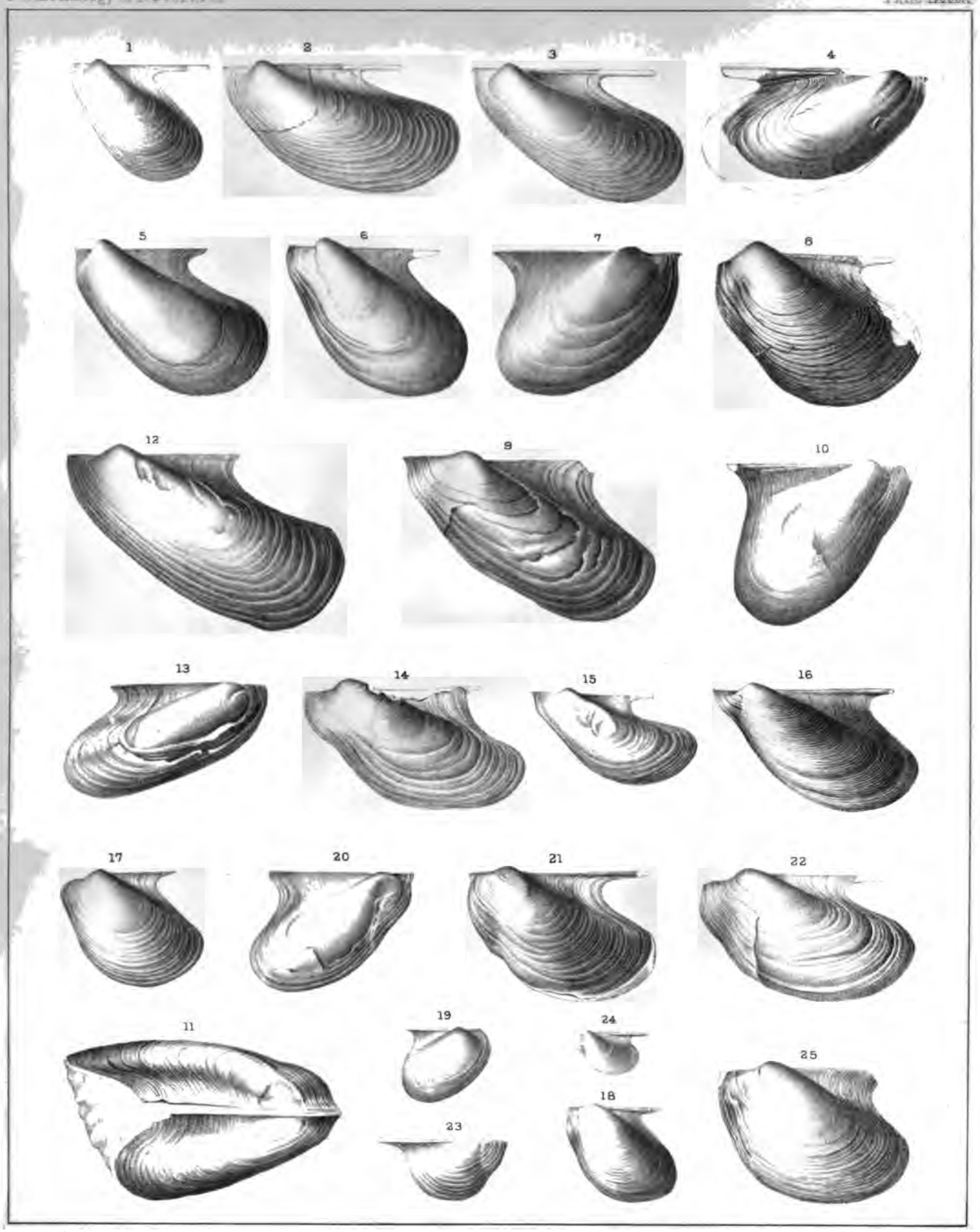
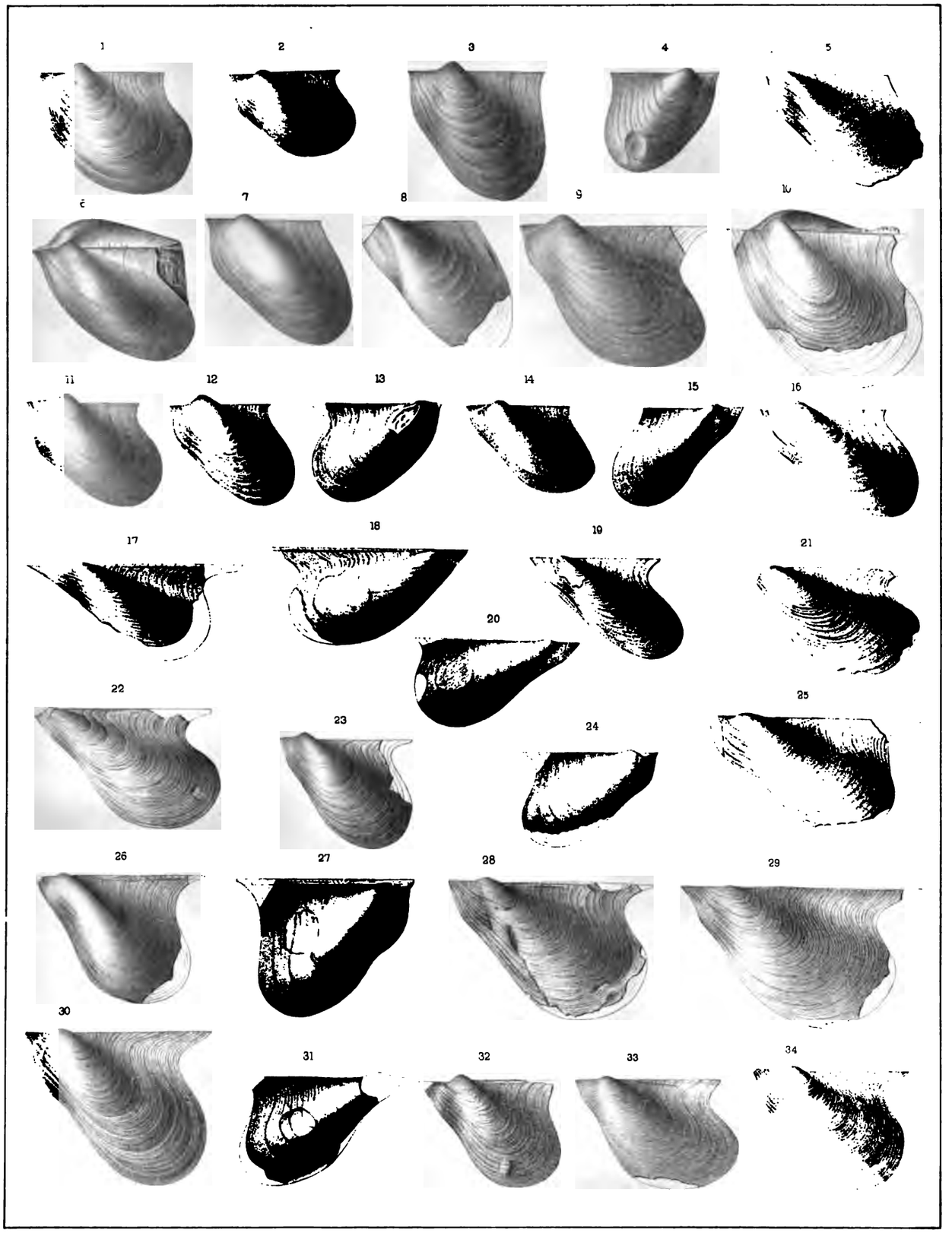
CHEMUNG GROUP.



E. Emmons, del.

Chas. Van Benthuysen & Sons, lith.

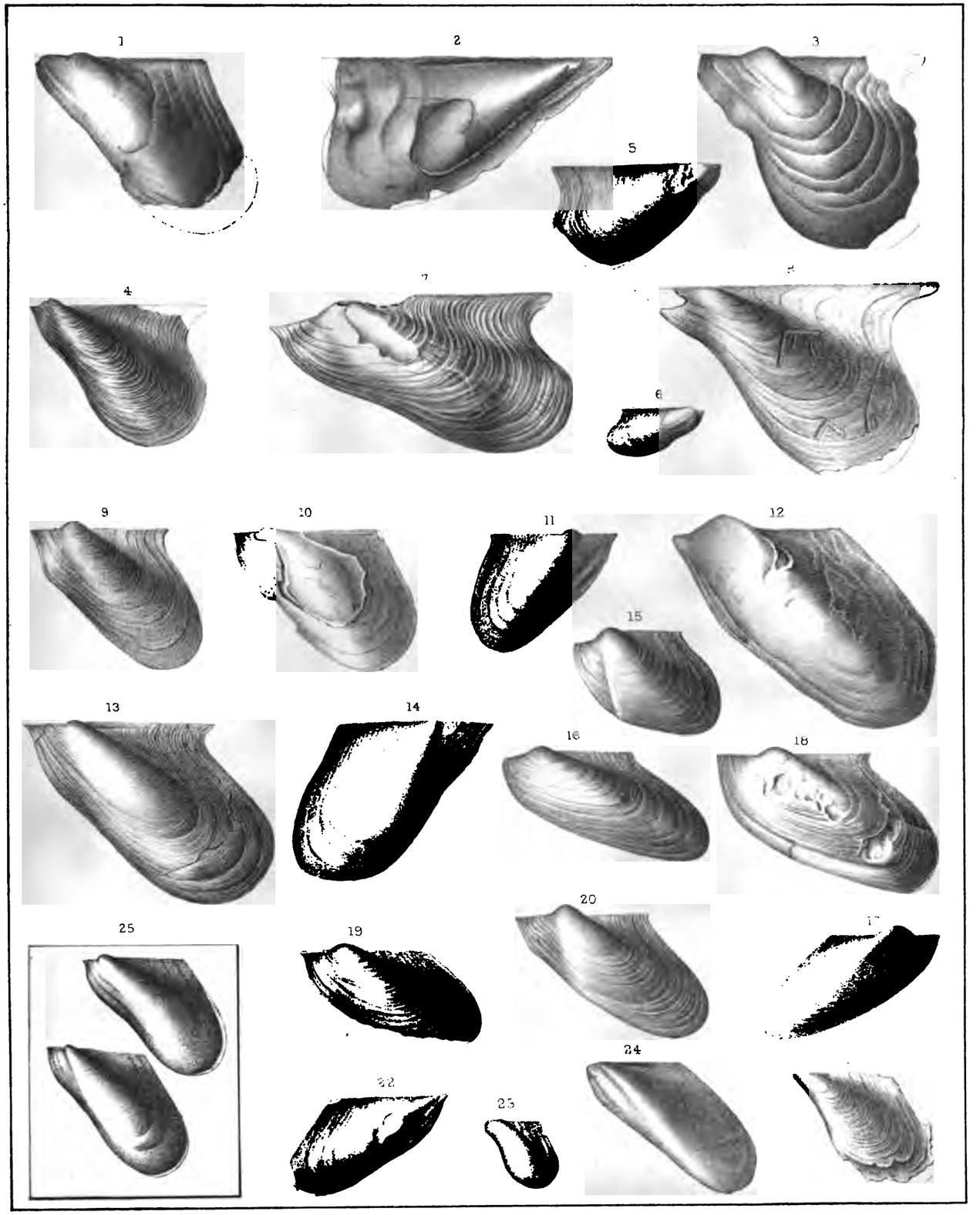
CHEMUNG GROUP.



C.E. Beecher del.

Photo-Lith.

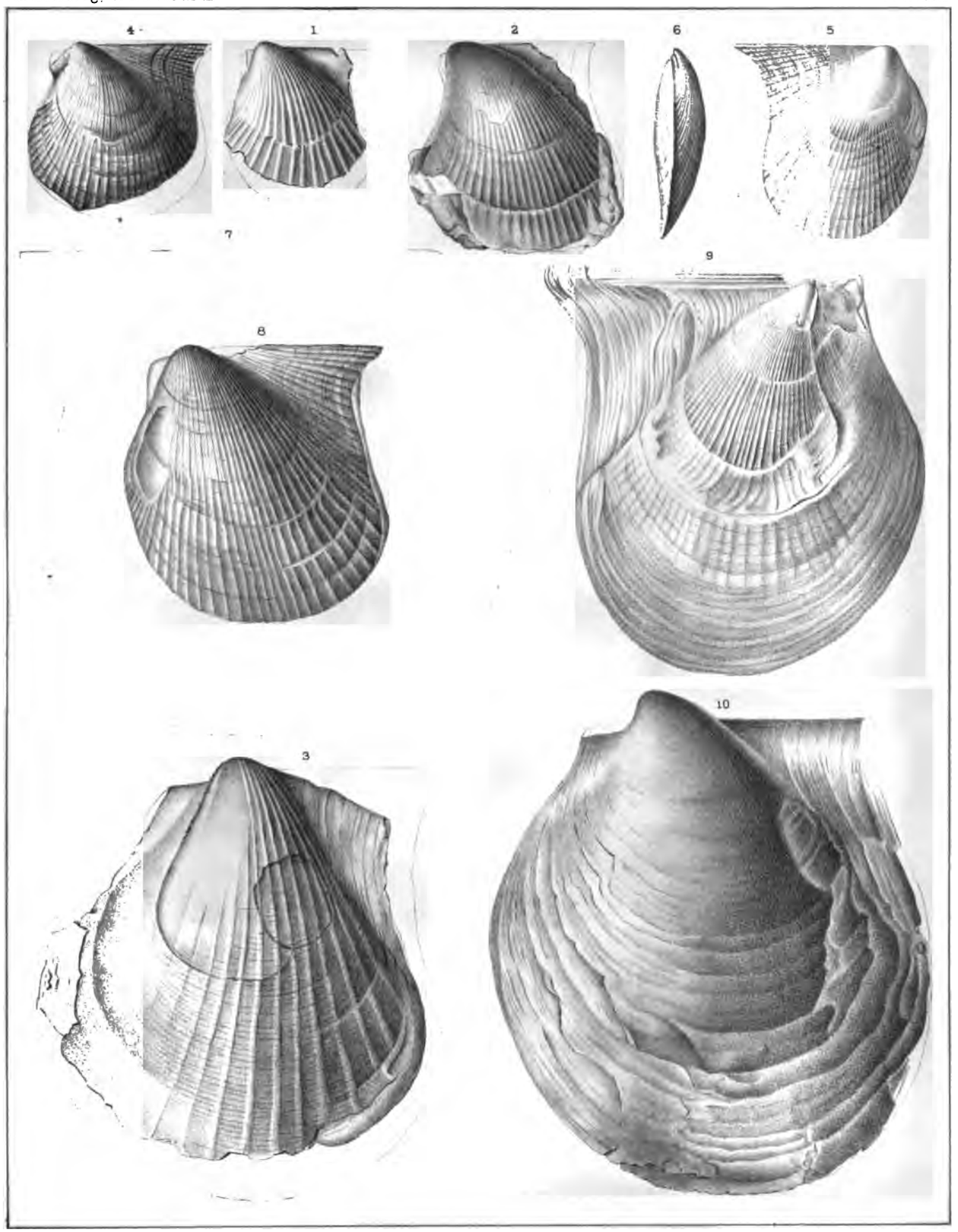
CHEMUNG GROUP.



E. Emmons del.

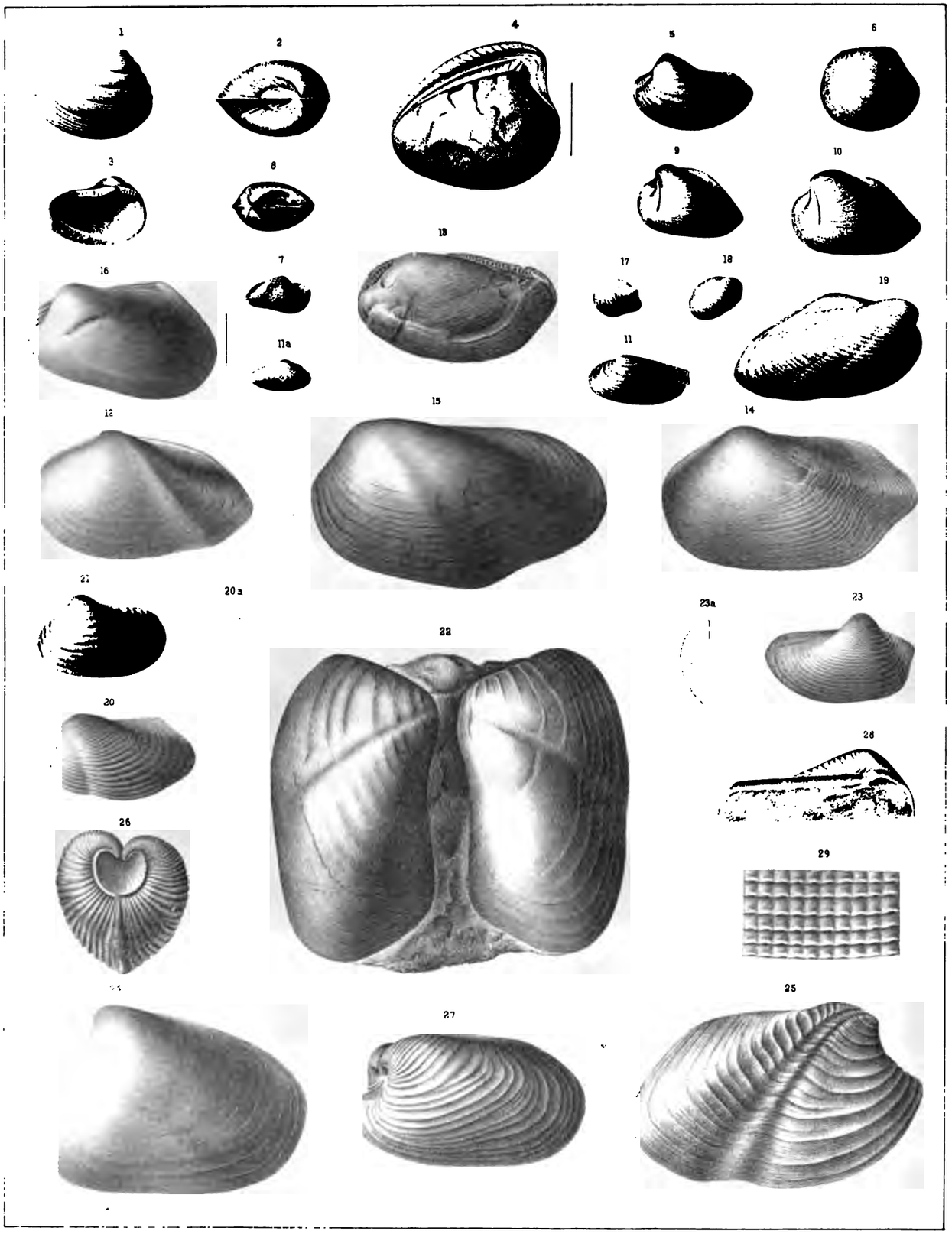
Sarony, Major & Knapp lith.

HAMILTON GROUP.



F. Emmons del.

Albany: Van Benthuysen & Sons lith.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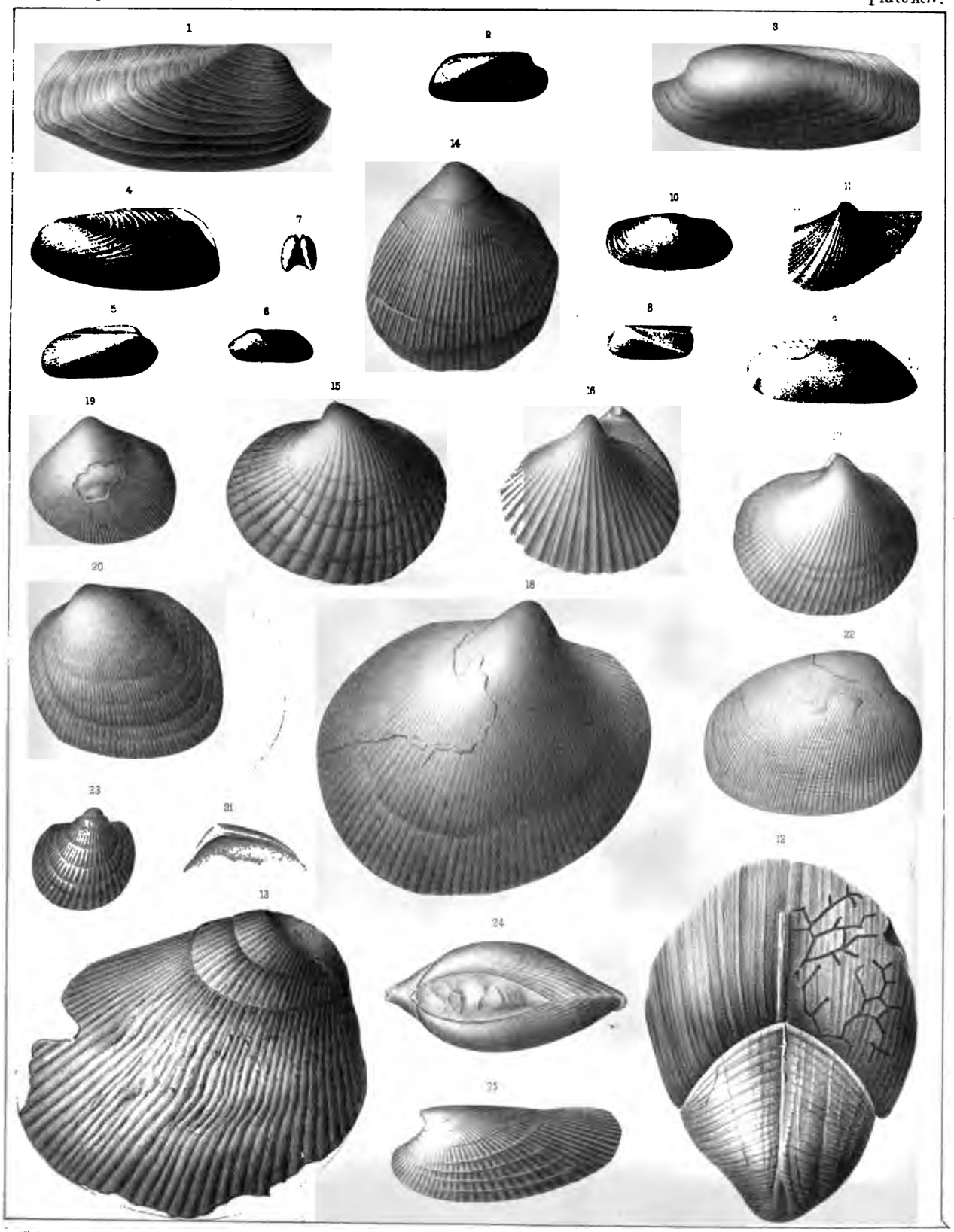
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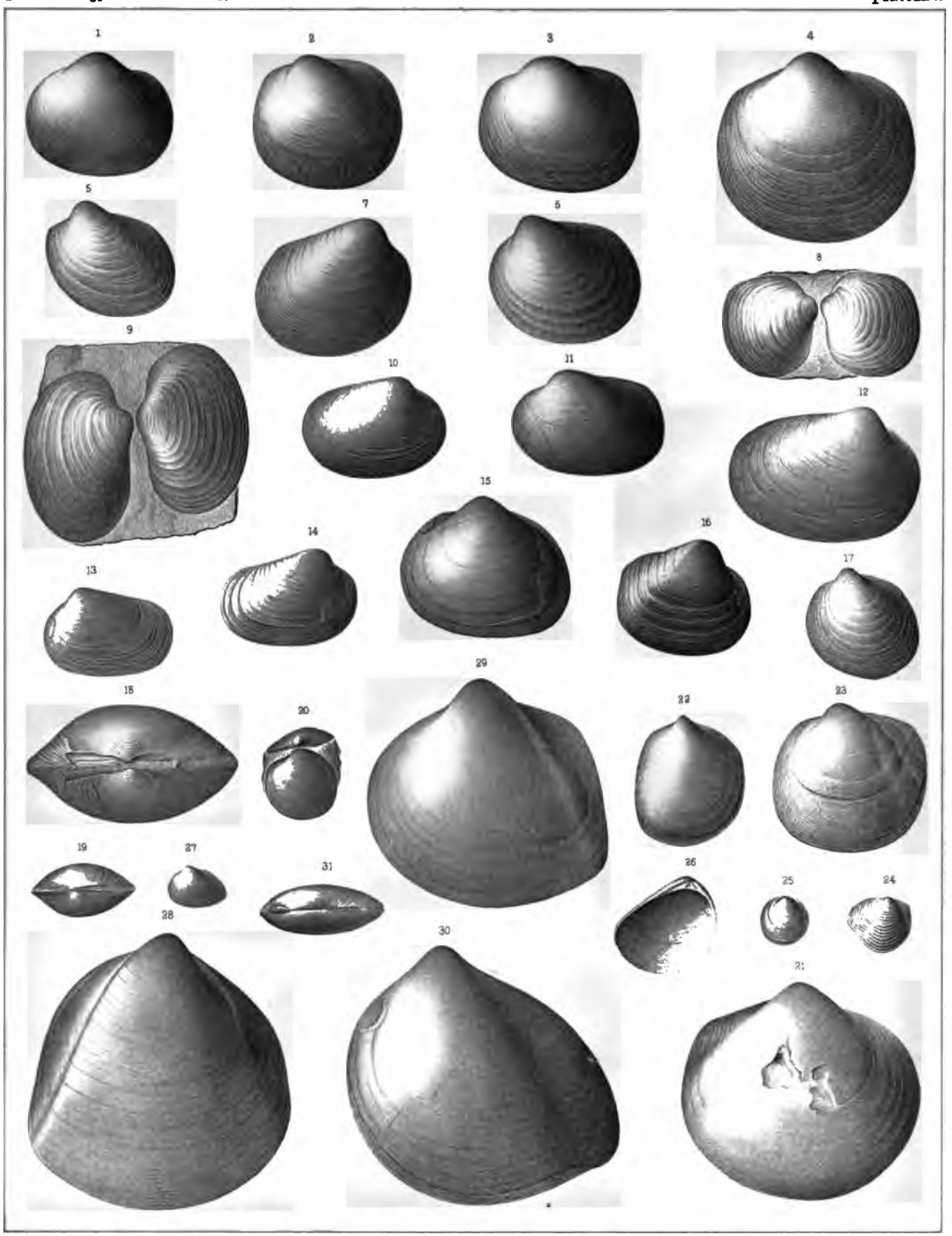
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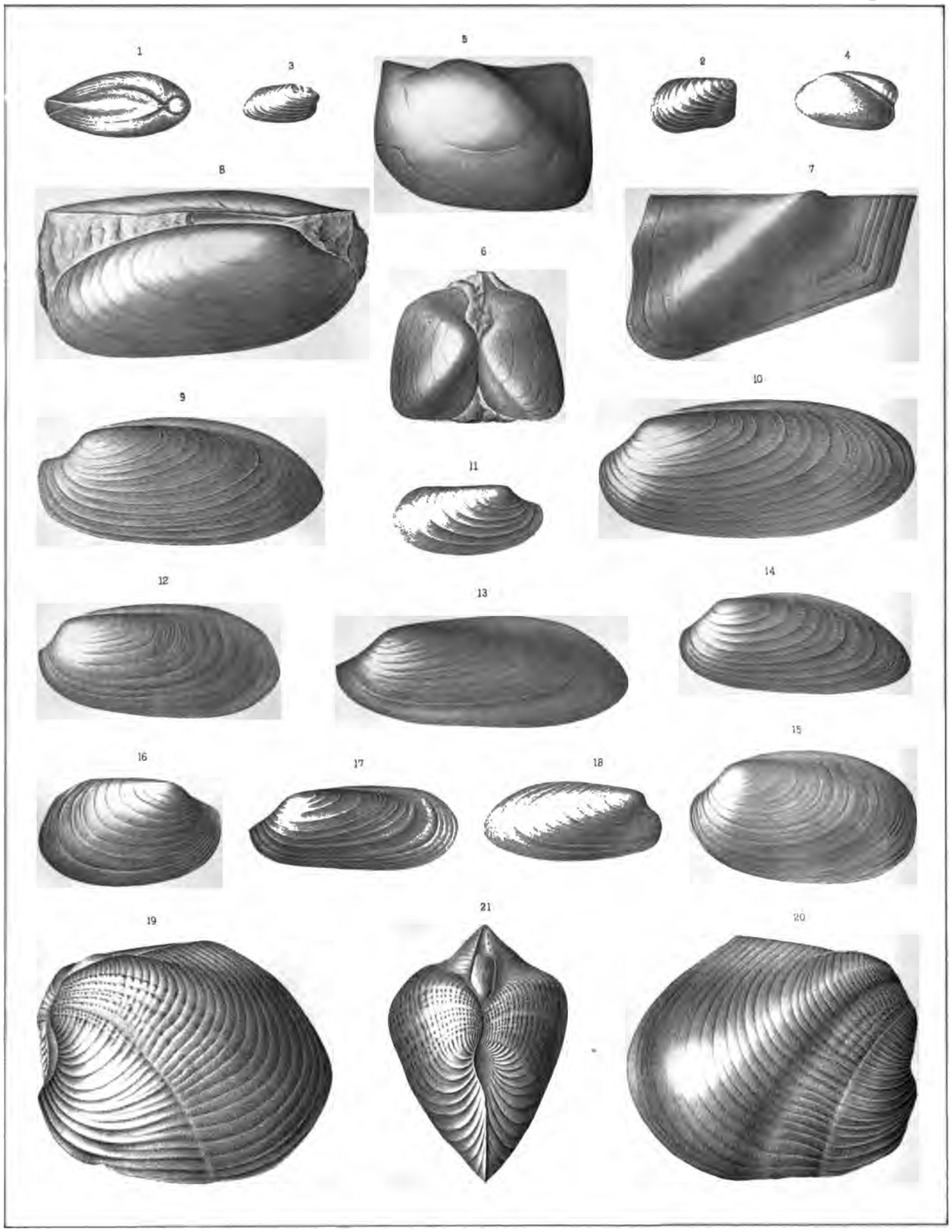

E. Francis, del. Pl. Art. lith.

Geological Survey of New York.

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VOL. V.—Part 1.

LAMELLIBRANCHIATA.

PLATES AND EXPLANATIONS.

C. A. Shree

Received from Prof Hale
January 10th 1884

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NATURAL HISTORY OF NEW YORK.

PALÆONTOLOGY.

VOL. V.—Part 1.

LAMELLIBRANCHIATA.

I.

PLATES Nos. 81 TO 92 INC.

Geological Survey of New York.

NATURAL HISTORY OF NEW YORK.

PALÆONTOLOGY.

VOL. V.—Part 1.

LAMELLIBRANCHIATA.

II.

PLATES 35 and 42, 93 TO 96 INC.